

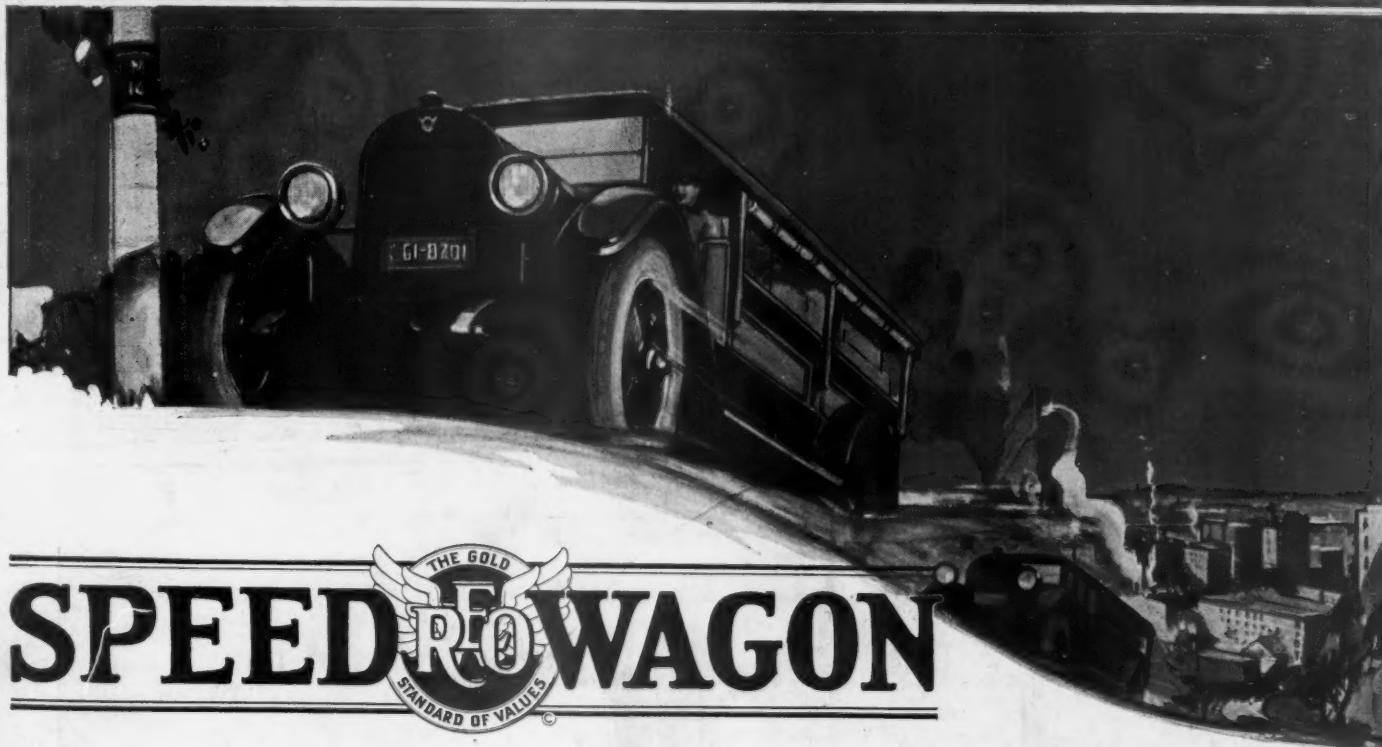
# THE COMMERCIAL CAR JOURNAL

Volume XXVIII  
Number 1

PUBLISHED MONTHLY BY CHILTON COMPANY, CHESTNUT AND 56TH STREETS  
PHILADELPHIA, SEPTEMBER 15, 1924

Forty Cents a Copy  
Two Dollars a Year

## Dominant in Commercial Haulage



### SPEED REO WAGON



DUE to proven ability to out-economize *any* other commercial car built—and according to any basis of computation—the Mighty Speed Wagon is the world's favored unit for every condition of highway haulage or city delivery.

Manufactured—not assembled—in the big Reo shops. More than 100,000 now in use.

**REO MOTOR CAR COMPANY, Lansing, Mich.**

Manufacturers of Motor Vehicles to Serve  
in Every Field of Highway Transportation

#### Models and Prices

Cab and Sills .....	\$1300
Cab and Express Body .....	1375
Cab and Stock Rack .....	1400
Cab and Grain Box .....	1425
Cab and Stake Body .....	1400
Cab and Canopy .....	1400
Cab and Canopy, with Screen Sides .....	1450
Cab and Canopy, with Double Deck .....	1425

Any of above can be supplied  
with closed cabs for \$35 extra  
Full Canopy Express (illustrated  
above) .....

above) .....

Carry-All, with Full Canopy .....

1400

Double-Deck with Full Canopy .....

1400

Chassis .....

1185

All prices f.o.b. Lansing

Capacity, 500 to 2500 pounds

# Clark Internal Gear Axles for Trackless Trolleys

Also used under heavy duty gasoline driven busses



Clark internal gear, wide tread axle, as built for trackless trolley and motor bus use.

## Road Clearance

Ample road and body clearance is essential in bus construction. The Clark internal gear axle has a small differential case at the center, as it takes most of its reduction at the wheel.

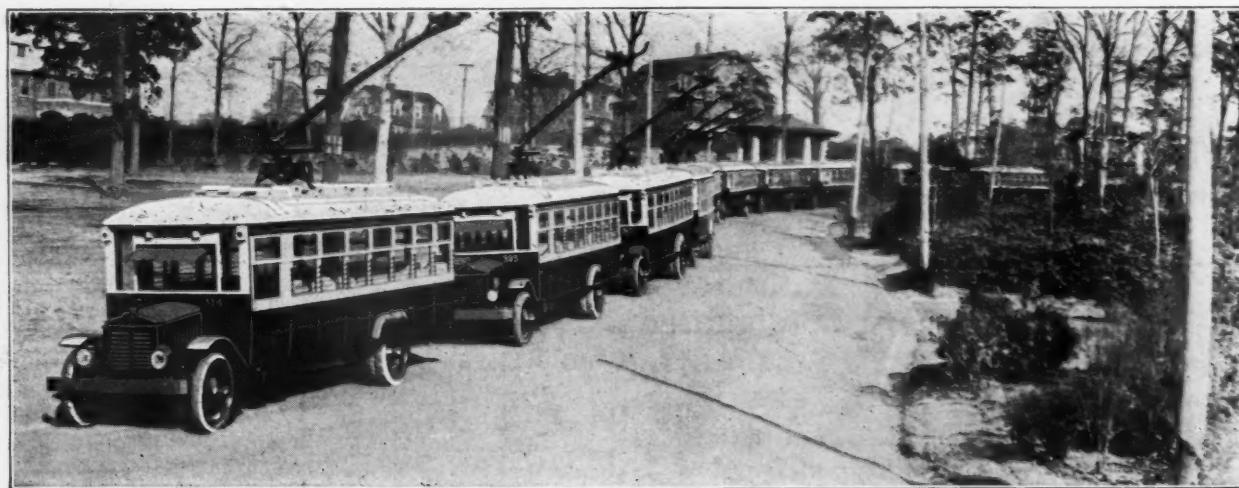
## Efficiency

The high efficiency of the internal gear drive is well known to all traction engineers who have used this principle in car construction for many years.

## Lightness

This axle is especially light in weight for its capacity, due to the driving axle having small, fast moving parts. The load is carried on a solid forging and requires no large, heavy hollow housing.

EXHIBITING AT A. E. R. A. CONVENTION ATLANTIC CITY, N. J.



A fleet of Brockway trackless trolley cars operated by the City of New York on Staten Island; these are equipped with Clark Axles.

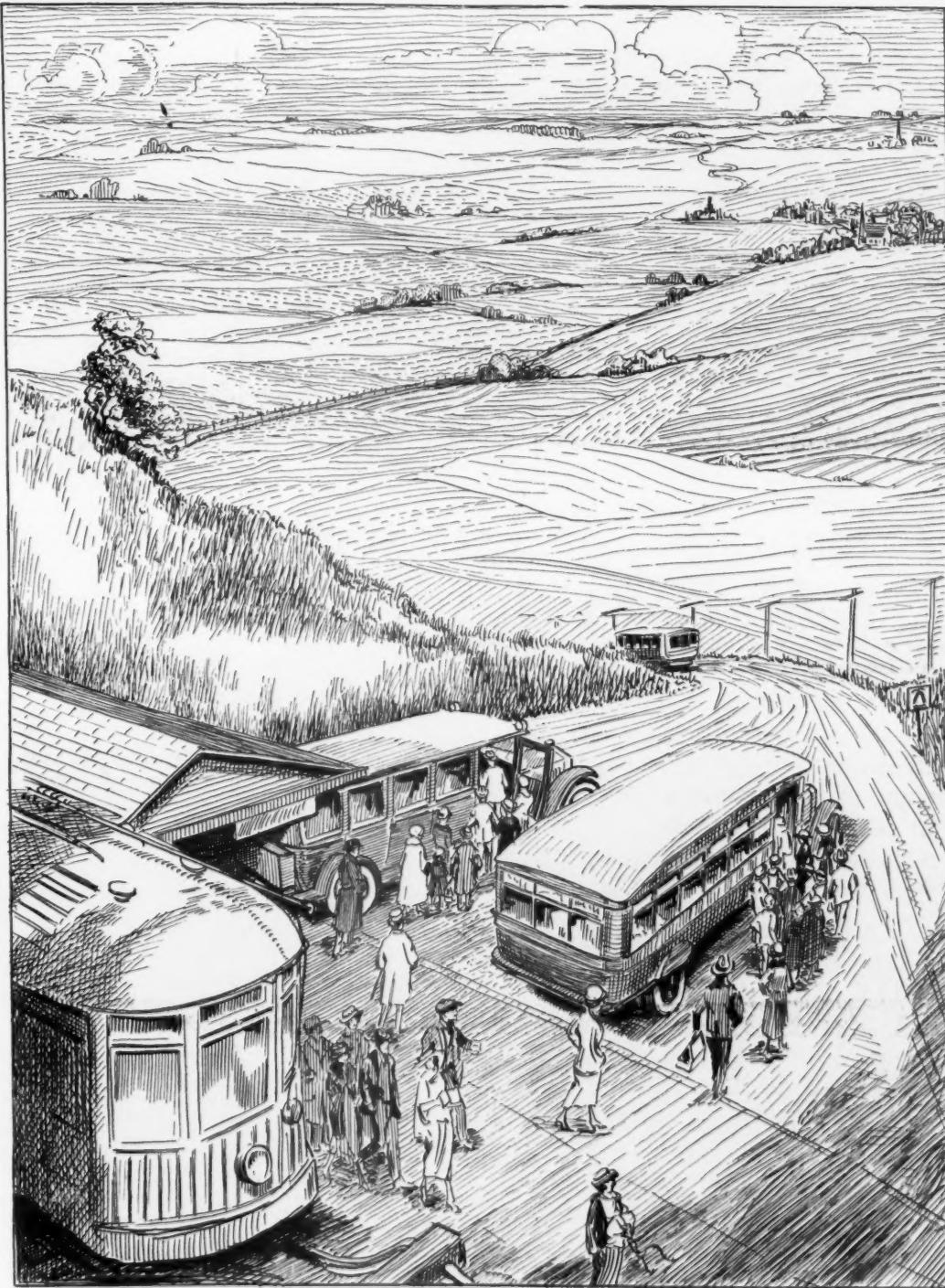
Clark Axles are Built by  
**CLARK EQUIPMENT COMPANY**  
BUCHANAN, MICH.

**CLARK**

BEVEL GEAR  
INTERNAL GEAR  
OVER HEAD DRIVE

**AXLES**

# THE PUBLISHER'S PERSONAL PAGE



"At the End of the Line—"




## “Cleaning Up” City Streets at Low Cost Made Certain with Ball Bearings

HARD WORK is the middle name of this truck which does its share in promoting sanitation of city streets. Ruggedness to withstand abuse of bad roadways and freedom from trouble even when subject to neglect are prime requisites on this type of vehicle.

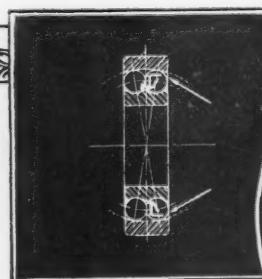
The daily grind of “cleaning up”

has little effect on the Skayef Self-Aligning Ball Bearings used to support the jack shaft. Made of chrome alloy steel, uniformly hardened throughout, they meet the rigid requirements of severe service and show no sign of wear even after years of operation. Requiring infrequent lubrication they are not a factor in the maintenance problem.

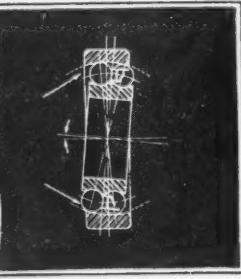
### THE SKAYEF BALL BEARING COMPANY

Supervised by **SKF** INDUSTRIES, INC., 165 Broadway, New York City

1243



Normal View



Deflected View

# THE COMMERCIAL CAR JOURNAL

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## TABLE OF CONTENTS

	PAGE
Advertisers' Index	140
Bus Table	44
Buyers' Index of Reading and Advertising Pages	134
Coming Events	27
Commercial Car Specifications	33
Editorials	25
News of the Trade, Including Personals, Factory Items, Etc.	25
Replacement Table	45

## SPECIAL ARTICLES

Motor Bus Industry on Way to Bigger Development	9
Motor Bus and Parts Exhibits at A. E. R. A. Show	11, 18
S. A. E. Transportation Meeting	19
Selling Trucks on an Investment Basis	20
Does Your Service Department Carry the Load?	21
Six-Wheel Stage Gives Greater Tire Mileage	30
Automatic Chassis Lubrication Reduces Operating Costs	31

# Evans Standard Loading Devices



In 1915 it took an average of 270 feet of lumber per car to double deck an automobile.

Today with Evans Standard Loading Devices it takes but 85 feet—annually saving the industry, the dealer and the consumer more than five million dollars (\$5,000,000) in lumber, labor and freight—with damage claims reduced by 90%.

*D. Evans*

President

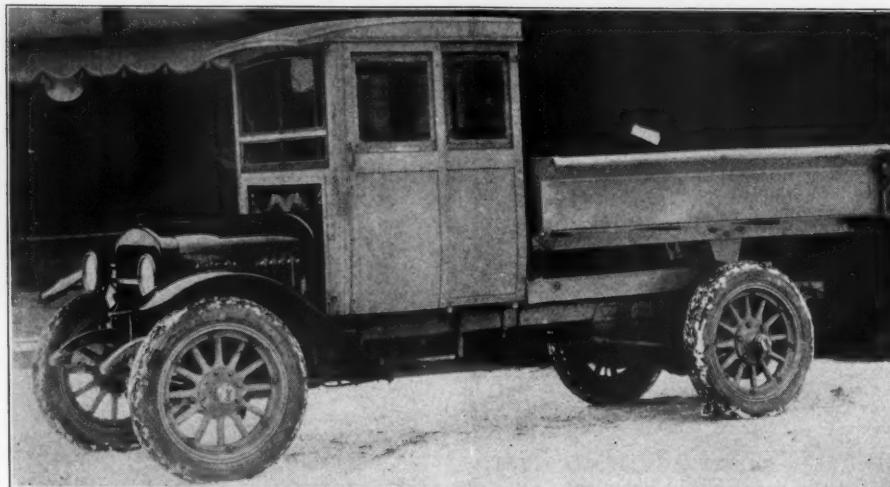
E. S. EVANS & CO. INC.  
Dime Bank Building · Detroit, Mich.



Loading Shipping Decks into Freight Cars at the Evans Detroit Factory

# PROFITABLE!

Model B on G. M. C.  
Chassis.



This model recommended for Bethlehem KW, Commerce, Federal, Garford 15-30, GMC K16, Graham Bros., International, Reo, Stewart, Traffic, United, White, Yellow Cab, etc.

Profitable—because of the high efficiency, the safety, economy, simplicity and all around superiority of SAFTEE Dump Bodies the use of small dump trucks in large fleet formation has been greatly increased. Dealers are finding big sales of trucks—*quantity* sales—and greatly increased profits in pushing the small dump truck fleet idea.

SAFTEE Dump Bodies are made in both the Hand-Operated and Automatic or Gravity Dump types. Both stand out above others for their safety. Both are easy to operate, built of 10-gauge steel, electrically welded and angle steel reinforced. Both have square corners for proper loading of brick or other square cornered stuff. Both have end-gates which open either top or bottom, and spread material as desired.

The Hand Operated type operates through an enclosed worm gear which remains in any position. No back-kicking crank handle, no ratchets, chains or cables—and no liquids as in hydraulic types. Best automotive engineering throughout—ball thrust bearings, Ale-mite system, etc. Heavy 5-inch channel steel sub-frame. Body attached to chassis by 4 U-bolts—no holes to drill. Made in 5 sizes for cars listed above. Your local coal dealers are interested in this body.

#### LIST PRICES

Hand Dump with D. A. End Gate. Capacity 1 to 2 yards, \$135.00 to \$225.00.

The SAFTEE Automatic Dump Body for Ford and Chevrolet chassis operates by gravity, dumping when released. The action is very quick—dumping in about three seconds and yet the SAFTEE Automatic differs in one very important point from other gravity types—by a special invention it avoids all severe jolting or racking of frame. Road clearance, 18 inches, when dumping.

#### LIST PRICES

Gravity Dump with D. A. End Gate. Capacity 1 to 1½ yards, \$135.00 to \$160.00.

**Ditwiler Manufacturing Co.**  
Galion, Ohio

**SAFTEE DUMP BODIES FOR  
LIGHTWEIGHT TRUCKS**



# Tired Out—Look Out!

Accidents don't happen; they are *caused*. Difficult steering is one cause.

An emergency arises. Muscles that should respond with a sharp, quick turn are dulled from road shock.

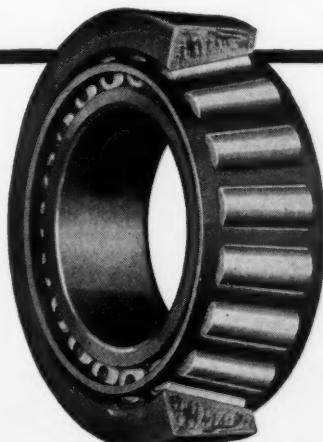
Trucks must be parked. Drivers must get from behind other cars. Both situations demand *easy turning* at low speeds. Without it—that is, without Timken Bearings on worm, sector, and in the steering pivots—accidents have opportunity to "happen."

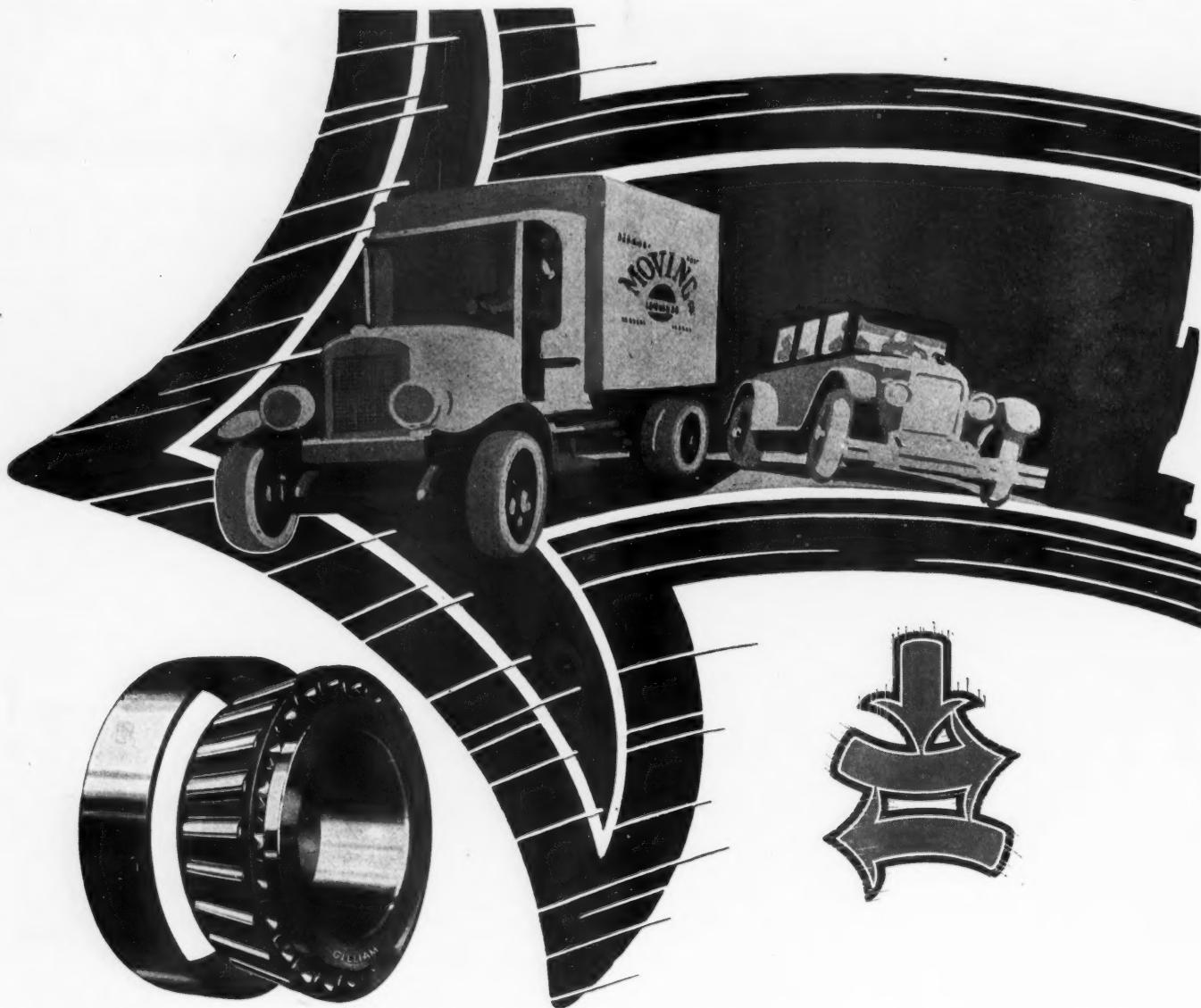
Timken Bearings make easy steering. They also eliminate bearing wear. Look into the bearings when you look at a truck.

**THE TIMKEN ROLLER BEARING COMPANY**  
CANTON, OHIO

©1924, T. R. B. Co.

**TIMKEN**  
*Tapered*  
**ROLLER BEARINGS**





## It is not merely "just a load" that they carry!

Even under the most favorable conditions of travel, not merely vertical loads but vertical loads merged with end thrusts—sudden jolts—severe strains and driving forces must be constantly met by the tapered roller bearings in motor trucks and passenger cars.

Where these destructive forces are the most severe, Gilliam Tapered Roller Bearings are successfully meeting and defeating them.

The Gilliam Manufacturing Company  
Canton Ohio

The arrow symbol signifies the recognized ability of Gilliam Tapered Roller Bearings to carry all combinations of radial and thrust loads from all directions. This better bearing performance is due to the tapered roller principle, exclusive features of design and high-grade alloy steel construction.

**GILLIAM**  
TAPERED ROLLER  
Bearings



# New Departure Ball Bearings

# Isn't Quality Worth That Care?

ALL steel ordered by us is made to our specification as to chemical constituents. Every piece of steel received is carefully analyzed by our metallurgists, and only upon the strictest adherence to our specifications is acceptance made.

A quarter of a century of study, research and experience enables us to know just what steels are required to maintain the good name which New Departure has earned as a quality ball bearing.

On the raw material depends the value of all of the many subsequent operations and inspections.

Our metallurgists know what they want—and will accept nothing else.

In our desire to attain perfection, are we super-critical? We believe that the satisfaction which New Departures are giving in thousands of trucks every year answers this question.

# THE NEW DEPARTURE MANUFACTURING COMPANY



## Drop Off the Train at TAMPA

and count the International Trucks. You will find them around the depot, and hurrying up and down the streets and byways. Everywhere you turn in Tampa, you'll find an International there before you. And each one is busy, getting loads to destinations surely and quickly and at low cost.

Tampa is an International town, and the Orange State Motor Company, distributor, is doing the work.

Three years ago the Orange State Motor Company was formed by men who knew International Trucks from the ground up. They knew the details of construction and service. They knew about the widespread International organization, which now includes 105 company-owned branches and service stations. They had seen International Trucks at work

under the most trying conditions, and the trucks had always "come through." With complete information and well-rounded experience to guide them, these men chose Internationals.

Three years ago, very few; today, approximately 400 International Trucks at work in and around Tampa. Sales are mounting each year.

Such is the success that International Trucks, plus determined effort, have brought to the men who are the Orange State Motor Company. If you are in a position to sell motor trucks, get acquainted with Internationals before you choose your line. The nearest International branch will show you the trucks, point out the features, and quote you vital facts and figures. With these facts well in your mind, the International dealership is your natural choice.

INTERNATIONAL HARVESTER COMPANY  
606 So. Michigan Ave. of America  
(Incorporated) Chicago, Ill.

INTERNATIONAL  
HARVESTER  
TRUCKS  
COMPANY

# The Commercial Car Journal

VOLUME XXVIII

PHILADELPHIA, SEPTEMBER 15, 1924

NUMBER 1

## MOTOR BUS INDUSTRY ON WAY TO BIGGER DEVELOPMENT

*Acceptance of Motor Bus by Railways Augurs Well for the Future of the Industry. Field Offers Unusual Opportunities for the Progressive Manufacturer. Maintenance End Must be Given More Attention*

No longer is it a question as to whether or not the electric traction interests will accept the motor bus as an adjunct to their present traction properties, but it is rather a question as to how they can best utilize the motor bus either for feeder lines or for supplementary service.

In other words all the animosity and skepticism that was so prevalent among the electric traction interests a few years ago has been practically wiped out.

Proof of this will be found by those who will visit the coming convention and show of the American Electric Railway Association.

By this we do not mean that the automotive industry has developed the bus to the point where it can sit back complacently and feel that the future of the industry will simply be a matter of production. Far from it. In fact the builders of motor buses have just begun to find themselves.

It can hardly be expected of any industry or any development to reach the point of standardization

in a short period of a few years. It has only been about five years ago that the jitney craze was at its height. Only a year ago the leading rubber center of the country was having a battle royal as to whether trolleys or jitneys would carry the riding public. But since the general adoption of the low frame type of bus, the development has been rapid and out of all this has come the desire on the part of manufacturers to produce the most luxurious and comfortable riding vehicle that they can build.

### The Undeveloped Market

It is interesting to note that in the coming exhibit at Atlantic City the coach and parlor car type of bus will be featured most prominently. Whether this type will appeal to the traction interests to the degree that some manufacturers think it will remains to be seen. The way that some manufacturers are pushing this type of vehicle or endeavoring to emulate other manufacturers, who have made a success with this type, indicates that they are not

visualizing the large undeveloped field which lies ahead of the motor bus industry.

There is a market for the sale of the individual seat parlor car or coach type of vehicle in those parts of the country where the tourist finds relaxation or where lack of railway facilities would permit the operation of the high class expensive vehicles.

From our observation we have found that many manufacturers have no definite idea as to the market in which they really expect to develop. Because the motor bus has become a necessity in the development of our transportation system, many manufacturers are venturing into the business in a more or less helter skelter fashion. It does not take much ingenuity to design a motor bus, especially when there are plenty of representative types on the market, but it is quite a different problem to develop a quantity market for that bus.

At the present time practically most of the motor coaches sold to the traction companies and the large

independent operating bus concerns are sold through direct factory representation. These large units run into a lot of money and should net the manufacturer a good profit providing the figure has not been made so low that little profit is left.

But this field does not compare with the potential market which must be developed through the medium of the dealer—either the exclusive truck dealer or the combination dealer who handles both passenger cars and trucks. In other words that type of bus which can be used for school work in rural districts and small towns, the type of bus that carries passengers between trading centers, the inter-city bus with rattan or plain leather seats, one that can be operated at a minimum cost at a moderate fare, that is the type of bus which the automotive industry must give its most serious attention.

#### The Dealers Opportunity

There are thousands of points in this country where the motor bus is actually needed and what the industry needs is plenty of enterprising dealers who will help to develop motor bus lines. Many bus lines can be organized without in any way interfering with local traction interests. On the other hand if the traction company is to be interfered with, or an attempt made to create a competitive service that causes unnecessary litigation the possibilities are that neither the bus lines nor the

traction interests will be the gainers and in most cases the bus line will be the loser. The prime object in selling motor buses should be to increase or better the service given to the public. The motor bus must be looked upon as just another conveyance by which the public can be better served. Any other motives or plans are due to failure.

#### Design and Maintenance

From a design standpoint the motor bus as we now know it has progressed with exceptional rapidity. The unit makers, particularly the engine and axle manufacturers, have contributed much towards producing buses which seem to have reached the highest degree of flexibility and comfort. Motor buses are not only comfortably built but too well built. In other words, the designer has given more thought to the building of the vehicle rather than the maintenance end, which is one of the chief problems about which the operator is mostly concerned. It is a very simple matter to build motor buses that are the last word in refinement, luxury and comfort but the fact must not be forgotten that the owner is the one that will eventually pass judgment on the repeat order on the particular make of bus. He will not forget the maintenance cost, even though the vehicle was a very handsome attractive looking affair when it first left the factory.

The engineer who designs motor coach equipment with little regard to the maintenance of equipment is doing more harm to the industry than he can imagine.

The object of the foregoing is simply to apprise the newcomer of the fact that the manufacturing of motor buses is not a business which can be developed one might say over night. Even the manufacturers who are today heavily entrenched in the business are meeting with problems every day. There is a definite parallel between bus and truck operations, which the truck operator has been forced to recognize and which must also be recognized by the bus operator.

From the design angle the question of maintenance must be given more consideration than has been the case in the past.

#### Too Many Models?

The manufacturer should limit his models to a definite number and endeavor to specialize in certain types rather than try to involve himself with too many models.

The Sales Department of the motor bus companies should endeavor to sell to individuals or companies whose ambition it is to give better service to the public. Unloading of buses on the buyer who has neither the business ability nor the financial means with which to carry out a definite service is suicidal for the bus manufacturer or the dealer.

## “AT THE END OF THE LINE—”

*THE illustration on the first page of this issue has been drawn to depict the idea that the motor bus is not a competitor of the trolley, but a means to extend the service which the traction line can render to its patrons. That is the way the traction official should view this picture.*

*The motor truck dealer will get the other angle. If he will consider that at the present time the number of miles of surfaced highways in the United States is nearly fifty per cent greater than the total mileage of the railroad lines and that there are about 2,500,000 miles of unsurfaced highways in the country, he must realize that the motor bus has open to it an enormous non-competitive field.*

*The motor bus will go wherever there is a road. On mountain trails or city streets, the motor bus has proven its worth. Its niche in the field of highway transportation has been carved out. But development must continue.*

# Motor Buses and Parts

## to be Exhibited at the

## A.E.R.A. Show—Oct. 6-10

**A**UTOMOTIVE interest will run high in the approaching show and convention of the American Electric Railway Association which will be held on the Million Dollar Pier, at Atlantic City, October 6 to 10. The bus and unit manufacturers will occupy 25 per cent of the space in the big show. There will also be a get-together on the part of street railway people and the automobile industry because of the increasing popularity of the motor bus in the traction world.

The harmony that now exists between the trolley and bus interests will be emphasized most strongly at the meeting of the Co-ordination Divisions of the A. E. R. A., scheduled for Thursday, the 9th, when the report of the Committee on Unification and Co-ordination of All Form of Local Transportation will come up for consideration. This committee is headed by G. A. Richardson, vice-president and general manager of the Chicago Surface Lines, who has arranged for discussions on the "Co-ordination of Motor Vehicle and Electric Service by Electric Railway,"

with A. J. Brosseau, secretary of the National Automobile Chamber of Commerce holding the brief for the Automotive industry, while Paul Shoup, president of the Pacific Electric Railway Co., San Francisco, will speak for his clientele.

Another important automotive-street railway session which will be held Tuesday afternoon under the auspices of the Transportation and Traffic Association, a unit of the A. E. R. A. At this meeting there will be considered a report from a sub-committee on Trackless Vehicle Operation, of which W. J. Flickinger, assistant to the president of the Connecticut Co. of New Haven, is chairman.

The Engineering Association, another unit, is expecting to receive a report on bus standardization from a sub-committee representing both the A. E. R. A. and the Society of Automotive Engineers, with Col. G. A. Green, of the Chicago Motor Coach Co., representing the S. A. E. and P. V. C. See, of the Northern Ohio Traction & Light Co., the street railway interests.

This sub-committee has not tackled the standardization problem as understood by the automobile manufacturers, but has undertaken only its A B C's. It hopes to standardize bus nomenclature and to define ruling dimensions so as to simplify the problems of the bus designer. This report will be brief and will be rendered Tuesday afternoon.

The show itself will be held at the same time as the convention, both at the same place and with no one permitted to have exhibits in hotel rooms. In fact, so determined is the A. E. R. A. to center the show activities to the show building that its directors have passed a resolution which frowns on bus manufacturers having demonstrators at Atlantic City. Wednesday has been set aside for inspection of exhibits and on that day no meetings will be held to conflict with the show.

Nearly 200 exhibitors have been booked and 84,424 sq. ft. of space will be occupied in comparison with 75,681 last year. Bus interests will use 23,493 sq. ft. of this space.

### WHITE WILL SHOW COMPLETE LINE

**T**HE White model 50-A bus with a variety of body types, as adopted by many of the country's leading electric railways, will be featured.

In the White exhibit proper, five buses will be displayed, predominance being given to 25-passenger buses of the pay-enter type, a design that has found much favor with railways for city service. Four pay-enter buses will be shown, with bodies by the Bender Body Company, the Brown Body Corporation, the G. C. Kuhlman Car Company and the Hoover Wagon Company. The fifth bus of the exhibit will be a 20-passenger parlor car with Bender body, designed for interurban service. This car will be equipped with individual leather chairs and otherwise luxuriously appointed.

The White Company has secured 14 of the regulation spaces in the exhibit hall and will have 1764 sq. ft. of display room. Adjoining the

White Company exhibit the Gustav Schaefer Wagon Co. will show a 25-passenger pay-enter White bus. The J. G. Brill Co. also will display a White.

The White model 50-A bus, designed especially for passenger transportation is exceedingly low. A wheelbase of 198 inches and long flexible springs of the passenger car type makes for riding comfort. The White buses to be exhibited at Atlantic City will all be equipped with 32 by 6 tires, dual wheels in the rear, replacing the 36 by 6 tires formerly used.

\* \* \*

### THE REO EXHIBIT

Reo will show a complete line of buses powered with both four and six cylinder engines with both Pay-Enter and Cross Country body types. This company will also feature a comprehensive and interesting service exhibit including special tools. A competent and experienced instructor will be in attendance to answer questions.

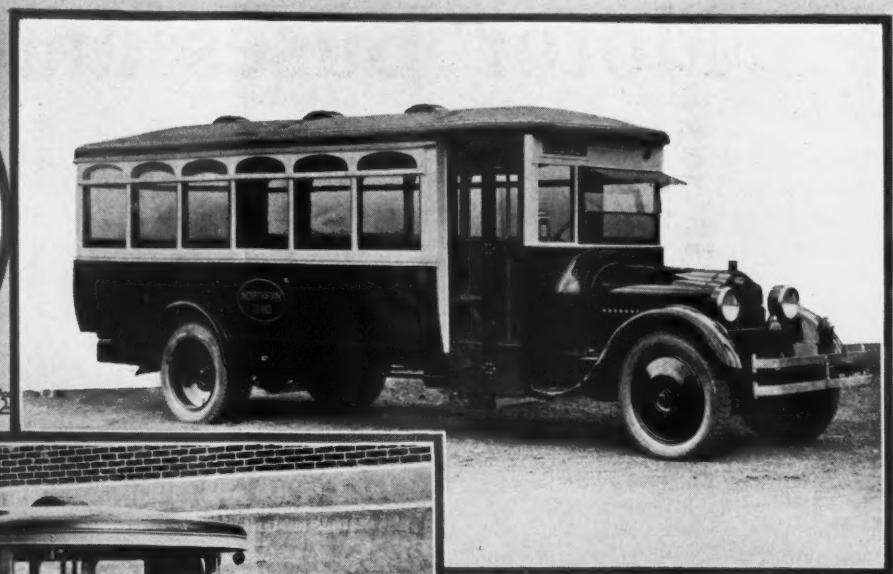
### PIERCE-ARROW COACH EXHIBIT

**N**OTABLE improvements and advances in design will be seen in the six-cylinder Observation Parlor Coach exhibited by the Pierce-Arrow Motor Car Company. The future trend of motor bus bodies toward the low stream lines of the modern sedan is strikingly indicated by this coach.

Developed especially to meet the demand for a vehicle suited to long-distance travel, the Pierce-Arrow coach contains every refinement that could add to the comfort of the passengers. Broad windows and extremely narrow uprights allow an unobstructed view in every direction. Each window may be lowered with a few turns of a handle and is fitted with artistic curtains which may be drawn if desired.

The individual armchairs are luxuriously upholstered and may be moved about in any position. If the passengers wish to play cards, tables

PAY-ENTER  
TYPES



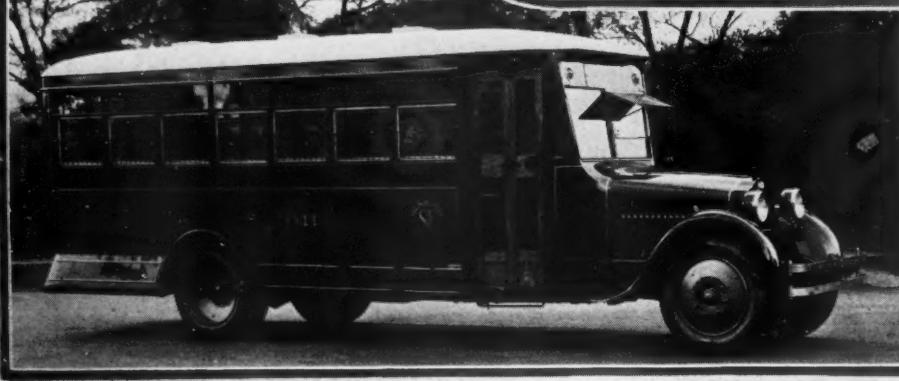
White 25-passenger City Pay-Enter bus with Kuhlman semi-steel body



Mack Model A B City type,  
Pay-Enter bus, 25-passenger  
capacity

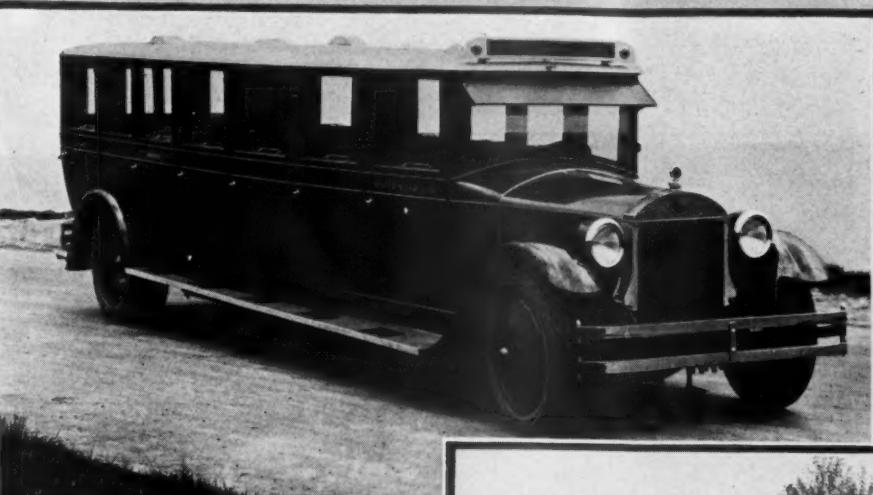


Model 50-A. White 25-passenger  
City Pay-Enter bus with  
Bender body



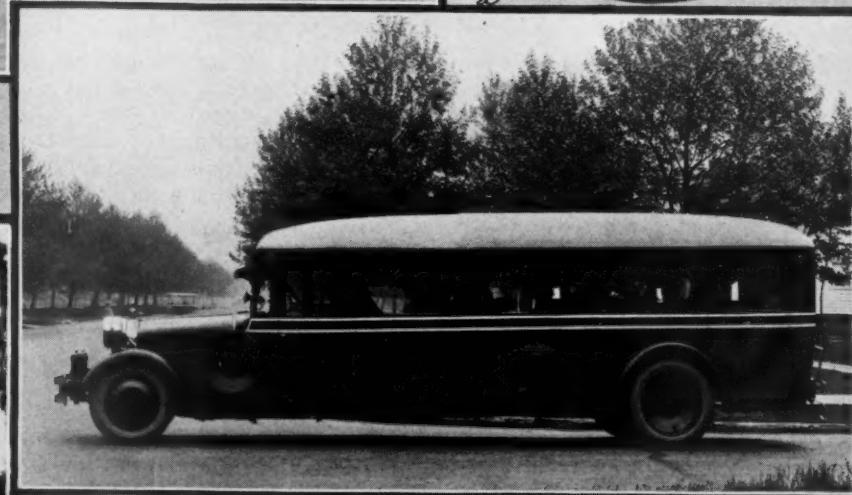
Model 50-A. White 25-passenger  
City Pay-Enter bus with  
Brown body

SOME OF THE PAY-ENTER AND COACH TYPES OF MOTOR BUSES

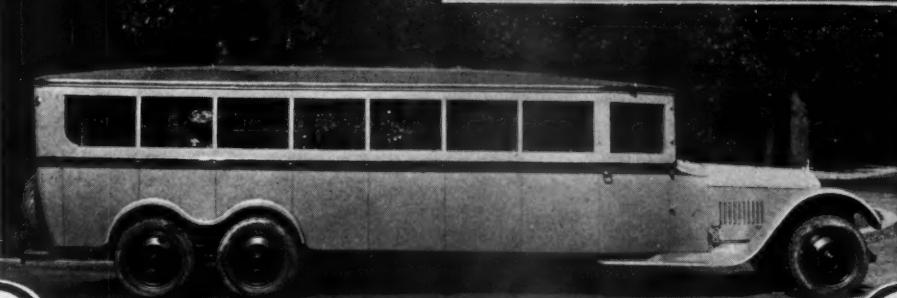


Mack Bus, 230 in. wheelbase, with  
Parlor Car type body

COACH AND  
PARLOR CAR  
TYPES



Model 50-A. White 20-passenger Parlor  
Car with individual chairs for inter-  
urban service. Body by Bender



One of the three Safeway models to be  
exhibited by the Six Wheel  
Company of Philadelphia



Reo Sedan Type of Cross-Country Bus

WHICH WILL BE EXHIBITED AT THE A. E. R. A. SHOW AT ATLANTIC CITY

may be produced from a special compartment and fastened along the walls. A water cooler is built into the body and numerous other articles of equipment, such as electric fans and special lighting, assure the comfort of the occupants. The coach is powered by a dual-valve six-cylinder engine which will permit a speed of more than fifty miles per hour, if necessary.

\* \* \*

#### GARFORD KB AND MODEL 56

**T**HE Garford Type KB De Luxe Coach, and the model 56 are the two Garford chassis to be featured by the Garford Motor Truck Co., Lima, Ohio.

Both are coach models of the De Luxe type, the first named having a seating capacity of 15 passengers, and the model 56, 25 to 30 passengers.

The model 56 has a low chassis frame, 20 in. from the ground. The frame is semi-rigid with seven cross members  $8\frac{1}{4}$  in. deep and  $3\frac{1}{4}$  in. flange. The deep section frame prevents body from sagging and doors from binding.

The long wheelbase of 220 in. together with long flexible springs assures easy riding. The wide track front and rear gives a short turning radius and very definitely increases safety factor, while the wide spring centers on the rear axle reduces body sway. The makers state that the six-cylinder engine used in this job is the largest to their knowledge made for bus work.

\* \* \*

**The J. G. Brill Company**, Philadelphia, are planning to exhibit two bus bodies which are of a new development but on which advance information is not yet available.

\* \* \*

**Bridgeport Brass Company**, Bridgeport, Conn., will show an actual installation of the company's product—Phono-Electric Contact Wire—on a miniature electric railroad system.



The Pierce-Arrow Six-Cylinder Observation Parlor Coach

#### SIX WHEEL COMPANY WILL SHOW THREE MODELS

**A**SIX-WHEEL motor coach, driving and braking on four rear wheels, with a road impact only twenty-five per cent as great as that of four-wheel, solid tired vehicles of similar weight, will be exhibited by Six Wheel Company, Philadelphia.

Three models of the Safeway Coach will constitute the exhibit: The inter-city model, with a wheelbase of 255 inches, and the city and de luxe models, with a wheelbase 31 inches shorter. A feature of the Safeway from the operator's standpoint is that any necessary repairs can be effected with a minimum loss of operating time. For instance, the engine, radiator, transmission and clutch are assembled as a unit, and can be removed as such in about thirty-five minutes. Thus, an oper-

ator of a fleet of coaches could keep a complete power unit in reserve, thereby insuring continuous operation.

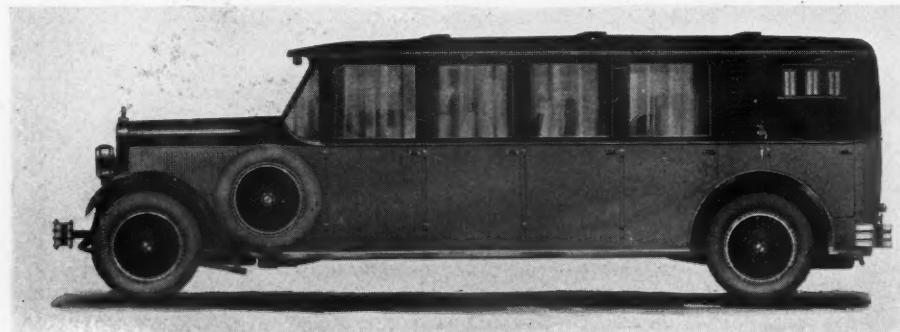
In the same manner, the rear wheel assembly can be removed as a unit in about twenty minutes. A complete detailed description of this vehicle appeared in our July 1924 issue, page 52.

\* \* \*

**Portland Cement Association**, Chicago, will exhibit an automatic balopticon, showing a large number of photos of electric railway uses of concrete. Literature will also be displayed which this organization publishes on the use of concrete in a large number of ways. Visitors are invited to consider this booth as a general source of technical information for any matter in connection with the use of concrete.



The Garford Model KB, De Luxe Coach



The Garford Model 56, 25-30 Passengers

**National Lead Company**, New York City, will feature a large painting of a city in panorama, showing both industrial and residential sections. In rotation, electric signs will flash on the painting, indicating the places where each lead product is used. On exhibition in the booth will be found National Lead Company's products of special interest to the electric railway and motor bus industries.



Commerce 29-Passenger Bus With Hoover Body Which Will be Exhibited by the Commerce Motor Truck Company, Ypsilanti, Mich.

## THE MACK EXHIBIT

At the Mack exhibit this year there will be three especially unique features. Besides the two standard Mack buses, the City type and the deluxe Sedan, there will be on display two sedan type jobs that are without doubt unprecedented in the annals of bus body construction for beauty and luxurious comfort. Both bodies are mounted on Mack 230½-inch wheelbase bus chassis. One is named the "Parlor Car" and the other the "Club Coach."

The Parlor Car, a veritable palace on wheels, has been designed and built to fulfill, even to the minutest detail, every requirement or desire of the fastidious for the utmost

comfort and convenience in long distance travel. Its low hung, graceful streamline body of unique yet sturdy construction and pleasing appearance, broad full-vision windows and luxurious interior appointments combine to make it "par excellence" the ultimate in motor equipment. It has comfortable individual chairs to accommodate twenty to twenty-four passengers.

The Club Coach, designed and built with the same purpose in mind, has the distinction of being the first bus body to be built of Meritus Fabric. It is produced by the E. J. Thompson Company of Pittsburgh, and is said to be the last word in beauty, comfort and quality. The

chief advantages of the fabric body is said to be its lightness in weight without loss in sturdiness, low cost and rapidity of service repair in the event of an accident, and the long life and permanent lustre of the finish, requiring no painting. It is said that washing and polishing will keep the surface in excellent condition indefinitely.

The third special feature reflects the company's policy of rendering the best possible service to Mack operators. The Mack company, recognizing that continuity of operation is an all important factor in profitably operating buses, has taken steps to design and supply each of their service stations and many of their dealers with special tools that are time savers in handling the more common servicing jobs and maintenance repairs on Mack buses.

A set of these special tools will be on display at the Mack booth and demonstrations will be given of their efficiency.

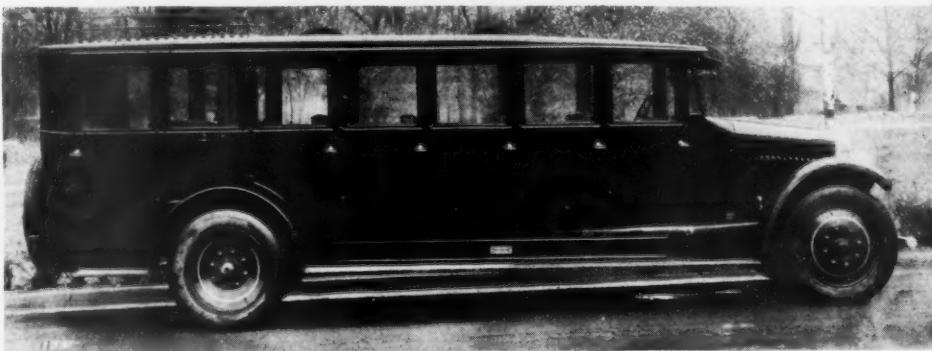
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**Brockway Corporation**, Cortland, N. Y., will exhibit its model J chassis with a 25-passenger, Pay-Enter, Street Car type Bender body. Also model H chassis which is specially designed and constructed for De Luxe service. It will be mounted with a 19-passenger Bender, Pay-Enter De Luxe body.

## INTERNATIONAL HARVESTER COACH JOBS

THE International Harvester Co. will have three of its latest models of coaches on exhibition, namely the 54-L-1, M and H types.

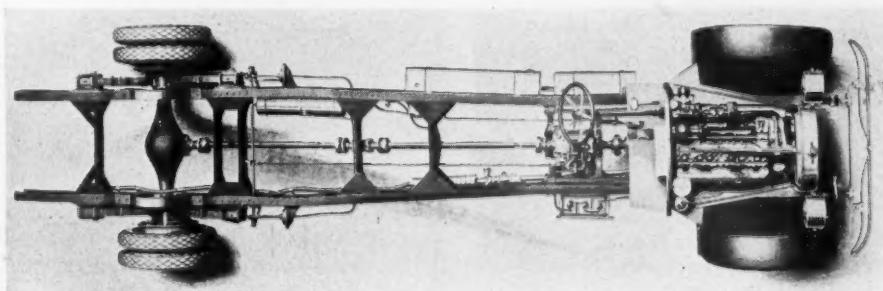
The chassis of the new line of International six-cylinder motor coaches are built in four basic types—model 54-L-1 for 12 to 16 passengers; model 54-M, 18 to 24 passengers; model 54-H, 25 to 30 passengers; and model 54-H-1, 25 to 33 passengers. This provides a selection of sizes and a variety of power units and final drives to meet practically any operating condition.



## The International Harvester Coach

The wheelbase is optional and supplied in accordance with the work the chassis is to perform and the

type of body that it has to carry. Coach bodies are available on these models of numerous designs to cover a broad range of demands. Chassis are also available to purchasers who wish to mount their own bodies after International engineers have approved the specifications of the bodies that are to be used. The frames are in three different depths, all of  $\frac{1}{4}$ -inch material. The lightest chassis has a frame 7 inches deep, the medium 8 inches deep, while the largest (models 54-H and 54-H-1) have frames 9 inches deep.



## International Harvester 6-Cylinder Chassis; Built in Four Types

### IMPROVED SNOW PLOWS ON WALTER TRACTORS

THE Walter Tractor Snow Plow which has been used for the past several years by some of the largest motor bus operators is now being furnished with an improved type of Snow Plow Equipment.

The front plow blade is 10 ft. long and 20 in. high and of the same type as before except that the hinge point has been brought closer to the blade edge in order to provide a quicker tripping action. The supports have also been modified in order to provide more rocking action. This blade can be swung straight or 40 degree either side. The lifting device for this front plow is of a new design of irreversible worm gear which works with very little effort so that the driver can raise or lower the front blade by means of a large hand wheel in the driver's cab. This lifting device is supported by a large V-shaped pressed steel member which serves as a radiator guard, preventing snow from clogging the radiator.

The center scraper plow is of an entirely new construction. The blade is 12 ft. long by 18 in. high and is provided with special 3 ft. high wings on each side in order to throw the snow over the snow banks. This center plow assembly is spring mounted so as to cushion the shocks in all directions in order to permit of plowing at high speeds without damage.

Experience has shown that it is advantageous to plow at high speeds in order to cover more miles of bus routes and to keep ahead of the snow fall. Furthermore, the snow throws or plows better at high speeds than at low speeds.

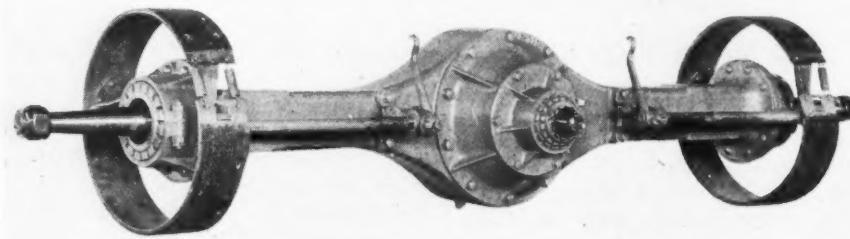
The plow controls take up only 2 ft. of space behind the driver's cab,

and with this equipment, it is possible to mount all types of standard or special bodies such as dump bodies, tank bodies, service bodies, etc., without interfering with the plow equipment. Both the front and rear snow blade units can be quickly removed or mounted as conditions require, in this way, making the tractor available the year around for all sorts of useful truck and tractor work.

The Walter Four Wheel Drive and Brake Tractor remains unchanged except for the engine which

is now made with Special Ricardo cylinder head so that the power has been increased to 65 h. p. This extra motor power in connection with the special 5 speeds forward tractor transmission permits of a 20 m. p. h. plowing speed in high gear or of developing a very powerful pushing effort in low gear.

The tires are now 40 x 8 in front and 40 x 10 in the rear in order to permit of carrying more weight on the tractor unit which eliminates the need of skid chains, except for very extreme conditions.



Clark Model B 360-650 Single Reduction Bevel Drive Axle With Specially Wide Tread (68-In.) for 18-Passenger Motor Buses

### CLARK MOTOR BUS AXLES

THE Clark Equipment Company, Buchanan, Michigan, manufacturers, of Clark axles and Clark steel wheels for motor trucks, and who were the pioneers in America in the building of special motor bus axles and wheels, will be represented at the Electric Railway Convention by Mr. E. B. Ross, vice-president in charge of the Automotive Department. Their exhibit consists of the following:

Clark Axle (B 360). Single reduction, bevel drive, standard tread for 12 to 15 passenger bus.

Clark Axle (B 360-650). Single reduction, bevel drive, 68" tread, for 18 passenger bus. (Illustrated).

Clark Axle (B 720). Single reduction, bevel gear, 68" tread for 25 passenger bus.

Clark Axle (3 D). Internal Gear Drive, 71" tread, for 30-35 passenger bus.

Clark steel wheels, hollow spoke, cast steel, for all sizes of pneumatic tires as used for motor buses.

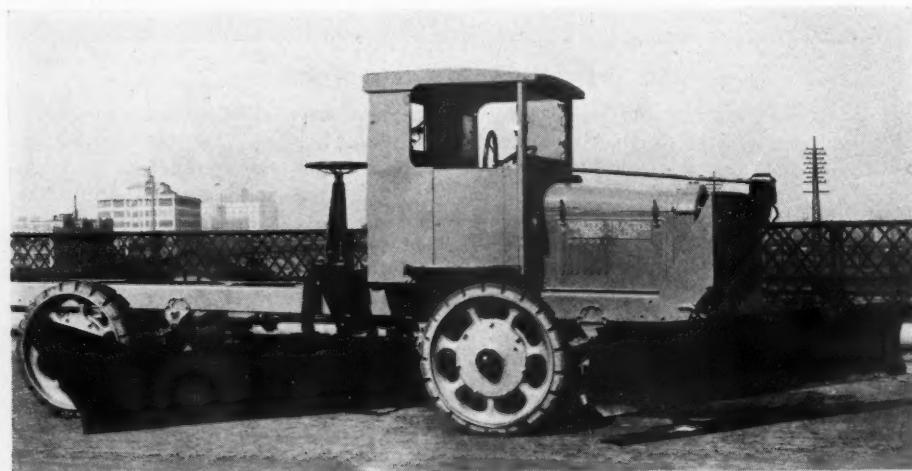
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### NORTH EAST ELECTRICAL EQUIPMENT

THE North East Electric Company will exhibit a full line of electrical equipment for buses and rail cars, including the following:

Generators with output up to 600 Watts for bus work as well as special generators of higher capacity for rail car work. Control units that are used with these generators are of two designs: One contains the current-voltage control and cut-out alone. The other combines with the control elements the switches, fuses, ammeter and terminal block for centralizing all the wiring circuits of the bus. The North East current-voltage regulator used in connection with the North East bus generators permits the generator to deliver maximum output at all operating speeds except as tapered down in accordance with the battery requirements.

North East starting motors which are giving service in bus work with



Snow Plowing Outfit Recommended by Walter Motor Truck Company for Large Bus Operating Concerns

internal gear reduction and extra heavy Bendix drives; ignition units with manual and automatic spark advance and with coil combined and separate; horns and speedometers built for severe bus service; various types of North East units with cut away sections to show the internal construction of the machines.

North East Service Incorporated, which officially handles service on North East equipment, will also have on display its line of service test equipment.

\* \* \*

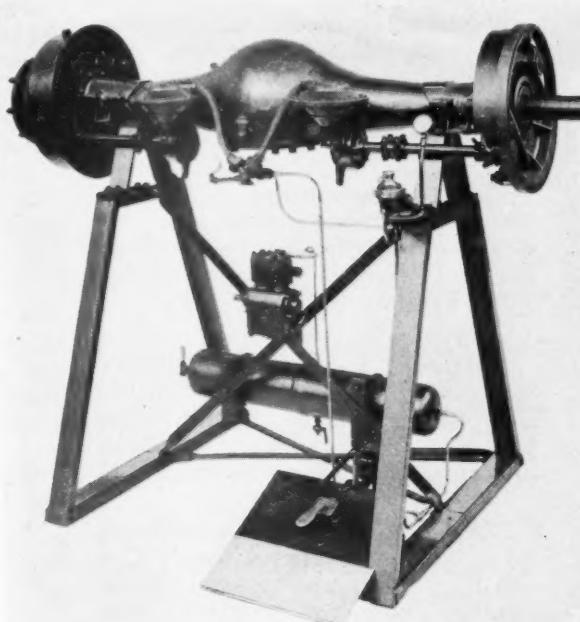
#### WESTINGHOUSE AIR BRAKES

The Westinghouse Air Brake Company, of Wilmerding, Pa., will feature at its exhibit a demonstration rack shown by the accompanying illustration. This rack contains the complete apparatus utilized in connection with the Westinghouse Air Brake System.

In the Westinghouse system compressed air is used in connection with brake chambers that are connected to the brake rods and are controlled either through a hand-operated or a foot-operated control valve. The air pressure is usually obtained from the engine itself through an accumulator as it is called, although where the service requires it an air compressor is used and driven from the transmission power take-off in the usual manner. The Westinghouse Company has recently developed an air compressor particularly designed for

supplying compressed air for its air brake system, as well as inflating tires, operating doors and so forth. Two sizes are available, one having a displacement of 3 cu. ft. per minute and the other 6 cu. ft.

At the show this company will also feature its renewable metal brake shoes and drum liners which are strongly recommended in place of fabric lined brakes, especially for service where the braking on grades is more or less continuous. It is stated that where the Westinghouse metal shoe equipment is used it is a simple matter to make renewals; that this can be done quickly and at less expense for labor and material than that required with fabric lined brakes. Extended service under severe conditions have demonstrated



Westinghouse Air-Brake Display Stand

that metal shoes will last about six times as long as fabric linings, while the metal liner has about four times the life of the ordinary drum.

\* \* \*

#### HALE-KILBURN CAR AND BUS SEATS

The Hale-Kilburn Co., of Philadelphia, will exhibit specimens of the principal models of electric, city, and interurban car seats, and also gas rail car seats.

In addition, they will also show a complete line of seats developed specially for motor bus work. This company states that it has developed and originated all the principal improvements in car seat construction during the past century, and that it was the first to adopt pressed steel in car seats as a means of increasing the factor of strength and greatly



Hale & Kilburn Bus Seats  
Pattern No. 108 Special De Luxe



The Heywood-Wakefield "Toureuse" Model

reducing the weight of seats; these being two vital features in connection with railway engineering.

#### HEYWOOD-WAKEFIELD COACH SEATS

The new Heywood-Wakefield motor coach seats to be exhibited by Heywood-Wakefield Co., of Boston, are claimed to be a radical departure from established customs in seat building.

The Luxureed, Travelux and Toureuse motor coach chairs will be the features of the Heywood-Wakefield display. The standard line of bus and car seats will also be shown, as well as the regular line of woven cane and snow-sweeper rattan.

\* \* \*

#### OHMER FARE REGISTER PRODUCTS

The Ohmer Fare Register Company, Dayton, Ohio, will feature various devices, such as indicating and recording fare registers both for motor buses and electric railways, also the new Ohmer Hub Odometer. When the Ohmer Fare Register Company purchased the business of the American Taximeter Company of New York, the latter company was manufacturing the Dreadnaught Hub Odometer. This has been greatly improved and put through the severest possible tests, with the result that the new Ohmer Hub Odometer has been developed.

The Ohmer Hub Odometer is simplicity itself. It goes onto the wheel in place of the hub cap. The hub cap is removed and the



The Ohmer Hub Odometer

Odometer put in its place. The Ohmer driving mechanism engages automatically and positively as the Odometer is placed on the wheel. No assembly or adjustment is necessary. The Ohmer Hub Odometer records positively and accurately all mileage. It always registers forward whether the truck is running forward or backward. The figures on the dial of an Ohmer Hub Odometer are always right side up, regardless of the position of the wheel.

\* \* \*

**The American Abrasive Metals Co.**, New York City, will exhibit a line of anti-slip safety treads for railway cars and motor buses. These treads are made of metal, either iron or bronze combined with abrasive grit which prevents wear and slipping. These products are made under various trade names, such as Feralun, Bronzalun, and Alumalun.

\* \* \*

**The Ohio Brass Company**, Mansfield, Ohio, will have a complete exhibit of Line Materials, Rail Bonds, Car Equipment Specialties and Porcelain Insulators. Of particular interest to the bus operator will be the materials particularly suited for trackless trolley operation, such as line material and equipment for the trackless bus.

\* \* \*

**Bethlehem Steel Company**, Bethlehem, Pa. will exhibit the following: Track equipment, such as frogs, switches, etc.; car equipment, such as rolled steel wheels (A. E. R. E. A. Contours); forged steel axles and armature shafts, etc. This company will also show samples of its special truck wheels.

\* \* \*

**Air Reduction Sales Co.** Complete display of Airco Oxygen, Airco Acetylene, Airco - Davis - Bournonville hand welding and cutting apparatus and specially designed

machines for oxy-acetylene cutting. Demonstrations of this equipment, including the Airco-Davis-Bournonville Oxygraph and Radiograph will be made daily.

\* \* \*

**Brown-Lipe Gear Co.** Latest designs of transmissions, clutches and controls for motor buses. One of the units will be shown in operation.

\* \* \*

**Buda Company.** Complete line of four and six-cylinder engines for motor buses.

\* \* \*

**Cleveland Pneumatic Tool Co.** Gruss air springs. A working bus model Gruss air spring will be built and torn down to show the simplicity of construction and replacement of parts.

\* \* \*

**Continental Motors Corporation.** Complete line of four and six-cylinder Red Seal Continental Motors designed and developed for motor bus service.

\* \* \*

**Duff Manufacturing Company.** New Type 15-ton track jacks; the new 15-ton safety combined trip and automatic lowering jacks; Duff high speed ball-bearing screw jacks.

\* \* \*

**Eberhard Mfg. Co.** Malleable iron hardware for bus body work, such as door controls, folding steps, bus seats, corner irons, windshield hinges, screen and rail holders, etc.

\* \* \*

**Eisemann Magneto Corporation.** High tension magnetos for 1, 2, 4 and 6-cylinder internal combustion engines, buses, also magneto generator for furnishing H. T. Ignition current, at the same time generating a separate powerful current for lights, impulse starters, flexible couplings, etc.

\* \* \*

**Fageol Motors Company of Ohio.** Five models of Fageol Safety Coaches, Chassis, double deck model, observation parlor car model, inter-city model, single deck model.



The Huck Model 85 Double-Reduction Axle

This axle will be featured by the Sheldon Axle & Spring Co. (Huck Axle Division), Wilkes-Barre, Pa., at the show. This model is designed for use under high-speed motor coaches and heavy-duty buses. It is also made in a smaller size, Model 25, for narrow tread buses. This axle is designed to give maximum overhead and road clearance. The Model 85 has a road clearance of over 11 in. when the vehicle is equipped with 36-in. tires.

**Graham Brothers.** 20-passenger street car type bus; 18-passenger sedan bus.

\* \* \*

**Hinkley Motors, Inc.** Gasoline engines, new models, transmissions for Fords.

\* \* \*

**Hoe Corporation.** New patented self-adjusting, ratchet action wrenches.

\* \* \*

**Leece-Neville Co.** Electric lighting and starting equipment for motor buses, voltage regulated generator characteristics, illustrated by showing same in operation.

\* \* \*

**Panelite Board Co.** Panelite roof sections, headlinings and sidelining for street cars and buses.

\* \* \*

**Pantasote Company.** Will show Agasote, Vehisote panel boards, Thermasote insulating board, Pantasote curtain and seating materials, Russialoid seating, material, street car and bus roofs.

\* \* \*

**N. A. Petry Company, Inc.** Bus Heaters, Cut-outs, etc.

\* \* \*

**Timken-Detroit Axle Company.** Will exhibit the latest developments in front and rear axles for motor coaches. Hydraulic four-wheel brakes and F. J. worm gearing are features of this equipment.

\* \* \*

**Waukesha Motor Company.** New six-cylinder and four-cylinder bus models, also new four-cylinder 75 and 100 h. p. models designed for rail-car service. Will exhibit also Ricardo type of cylinder heads.

\* \* \*

**Yellow Coach Manufacturing Co.** Model "Y" 6-cylinder chassis. Model "Y" 23-Passenger parlor car; Model "Y" 25 passenger pay-enter street car type coach; Model "X" 6-cylinder chassis; Model "X" 17-passenger sedan; Model "X" 21 passenger pay-enter street car type coach; cut away 6-cylinder Yellow Knight Sleeve Valve engine.

# Transportation Meeting, September 18-19

## *Bus, Motor Truck and Rail-Car Maintenance and Design Will be Discussed at Two-Day Transportation Meeting in New York City*

**A**MOST comprehensive group of papers by authorities of long experience in their respective fields will form the basis for discussion at the two day national meeting of the S. A. E. There is certain to be sufficient valuable material in the discussions and papers to more than repay those fleet operators, commercial vehicle engineers, railroad equipment engineers and operators of public utilities who attend.

One of England's foremost motor-transport authorities, James Paterson, managing director of Carter-Paterson, Ltd., operator of an extensive British motor-cartage service with headquarters in London will be one of the prominent speakers. Carter-Paterson, Ltd., has developed operating methods, vehicles, bodies and trailers, the description of which should be of great value to American traffic men and engineers.

One of America's most successful motor-cartage organizations will be represented on the program in the person of J. A. Hoffman, vice-president, Motor Haulage Co. of New York City. This company operates motor-transport facilities for several of New York's large shippers. Only recently the Motor Haulage Co. became associated with the Long Island Railroad in the handling of less-than-carload shipments in the Metropolitan area and along the railroad's lines leading out of New York City. In addition to Mr. Hoffman's paper, a visit will be made to the maintenance station and some of the operations of the Motor Haulage Co.

Types of trailer and semi-trailer for motor-cartage work will be described in a paper by H. W. Howard, transportation engineer with the General Motors Corporation.

### Papers on Gasoline-Propelled Rail-Cars

Papers on rail-car design and operation that will be given by W. L. Bean, mechanical engineer of the New York, New Haven & Hartford Railroad, and J. W. Cain, manager of purchases of the American Short Line Railroad Association. Mr. Bean is widely recognized as an authority on railroad motive-power engineering. He has been experimenting for several years with various types and sizes of rail-car, starting with the early trial of "motor trucks on rails." His latest experiments have been with rail-cars equipped with hydraulic transmissions.

### Two Sessions Devoted to the Motor Bus

The growth of motor bus transportation by leaps and bounds has naturally accentuated many problems of bus design,

maintenance and operation. These are to be discussed thoroughly during the two motor bus sessions. F. D. Howell, of the Motor Transit Co., of Los Angeles, will handle one of the papers. Mr. Howell is connected with one of the largest operating companies on the Pacific Coast, running 125 cars in local and through service over some 800 miles of highway, radiating out of Los Angeles in all directions.

R. E. Fielder, chief engineer of the Fifth Avenue Coach Co., will present a paper setting forth the methods followed by that company in maintaining its large fleet of local-traffic buses. Mr. Fielder's paper will be particularly significant since it will precede an inspection trip through the maintenance station where Fifth Avenue buses are given their periodic overhaul.

Vincent E. Keenan, superintendent of the bus division of the United Electric Railways Co., of Providence, R. I., and J. B. Stewart, Jr., general superintendent of the Youngstown Municipal Railway

Co., will indicate in their respective papers how motor buses can be operated to advantage by electric street railways. Other speakers on the motor bus include: W. F. Evans, president of the Detroit Motor Bus Co.; and Hugh G. Bersie, of the Haskelite Mfg. Co.

### Should Trucks be Replaced or Rebuilt?

Fitting in with the general program of the Automotive Transportation Meeting, the Metropolitan Section of the society will hold its first meeting of the fall on Thursday evening, Sept. 18, and all in attendance at the national meeting will be invited to attend as guests of the Section. The paper will be given by Francis W. Davis, a specialist on engineering problems of commercial-vehicle operation. His paper will discuss continuous rebuilding and maintenance of motor trucks as opposed to the scheme of retiring them after they have operated a given number of years.

### AUTOMOTIVE TRANSPORTATION MEETING

NEW YORK CITY

SEPT. 18 AND 19.

Thursday, Sept. 18.

10.00 A. M.—MOTOR BUS SESSION (Hotel Pennsylvania):  
V. E. Keenan, superintendent, bus division, United Electric Railways Co., Providence, R. I.  
W. F. Evans, president, Detroit Motor Bus Co., Detroit.  
J. B. Stewart, Jr., general superintendent, Youngstown Municipal Railway, Youngstown, Ohio.

1.00 P. M.—MOTOR BUS LUNCHEON (Hotel Pennsylvania).

2.30 P. M.—MOTOR BUS SESSION (Hotel Pennsylvania):  
F. D. Howell, vice-president, Motor Transit Co., Los Angeles.  
Hugh G. Bersie, engineer, Haskelite Mfg. Co., Chicago.  
R. E. Fielder, chief engineer, Fifth Avenue Coach Co., New York City.

8.00 P. M.—METROPOLITAN SECTION MEETING:

Francis W. Davis, consulting engineer, Waltham, Mass.

Friday, Sept. 19

9.00 A. M.—MOTOR BUS INSPECTION TRIP:

Buses will leave Society headquarters, 29 West 39th Street, at 9 o'clock, taking members and guests to maintenance shops of the Fifth Avenue Coach Co., the motor transport station of the Motor Haulage Co., and the fleet quarters of R. H. Macy & Co., one of New York's largest department stores. Return will be made to the Hotel Pennsylvania in time for the

1.00 P. M.—MOTOR TRANSPORT LUNCHEON (Hotel Pennsylvania).

2.30 P. M.—MOTOR TRANSPORT SESSION (Hotel Pennsylvania):  
J. A. Hoffman, vice-president, Motor Haulage Co., New York City.  
H. W. Howard, transport engineer, General Motors Truck Co., Pontiac, Mich.  
J. W. Cain, manager of purchases, American Short Line Railroad Association, Chicago.

8.00 P. M.—NEW YORK RAILROAD CLUB MEETING—(Engineering Societies Building):

James Paterson, managing director, Carter-Paterson, Ltd., London, England.  
W. L. Bean, mechanical engineer, New York, New Haven & Hartford Railroad, New Haven, Conn.

# Selling Trucks on an "INVESTMENT BASIS"

By L. BOUCHIER

**W**E sat in front of the Miley Bros. Garage at Chariton, Iowa. Jack Miley had just made an astonishing statement—a statement that seemed a little strong. "We sell six out of every eight trucks sold in this community," he had said. So we were making a mental check of the trucks which passed. A Reo Speed Wagon with a load of hogs went by. An oil tank on a Speed Wagon chassis passed. Came an old Samson truck with a load of farm produce.

"Sell that?" we inquired.

"Sure," returned Miley. "We used to handle Samson trucks and tractors."

More Reo trucks passed. A ratio of better than six to two was being maintained. Finally an "off-brand" truck—and off-brand truck to the Mileys is anything but a Reo—passed.

"There!" we exclaimed in triumph. "How about that one?"

"Oh!" waved Miley. "I sold that second-hand outfit this spring. It was traded in on a new Reo Speed Wagon."

We gave up, accepted the six to two ratio as correct, and sat back to listen to Miley's idea of truck salesmanship.

"Trucks," said Miley, "should be sold on an investment basis. That is the whole secret of selling commercial vehicles. Show me the man who actually needs a truck and I can show him how it will make money. Passenger cars are often sold on a 'pleasure appeal.' A man buys a truck, not because its body lines appeal to him or because the cushions are soft, but because he believes that a truck will be a good investment from the standpoint of dollars and cents. Sell a truck to a man who doesn't need one and you have only brought trouble and dissatisfaction. Before a truck is sold, the dealer should analyze the haulage problems of the prospect and sell the vehicle on an investment basis. Trucks sold on the convenience argument don't stay sold."

"We sold some of the first farm tractors used in this community, but before we started to sell, we knew exactly what we were selling. We believed that a tractor was a good investment for the average farmer but we proved that fact before we sold many machines. We purchased what we believed to be a good machine and placed it in on our own farm. From the very first, our operator was required to keep accurate figures on operating costs, repairs and depreciation. We knew exactly what we were talking about when we told a man that a tractor would make him money. We backed up our statements with actual figures from our own farm. A man must be thoroughly sold on his product before he can attain much success in selling. After we had proved to our own satisfaction that the farm tractor was a good investment, we set some records with our tractor sales.

#### Selling Yourself First

"Our truck business developed the same way. Before we became active in promoting truck sales, we tried out the truck in the same manner. Aside from our dealership in cars and trucks, we operate a small lumber company, supplying mine timbers to several of the coal mines near-by. Since we deliver the timber to the mines, we have considerable hauling to do. We placed two of the Speed Wagons on this timber hauling in direct competition with horses. We placed another Speed Wagon on our farm at the same time.

"From the very start we kept account of every operating expense. The expense of keeping a team was figured in the same manner. At the same time, we were keeping track of the number of ton-miles that both the horses and the trucks covered. From these figures it was easy to arrive at the cost per ton-mile for both the horses and the trucks. We found that we could haul cheaper with our trucks than with our horses, both on the farm and in our lumber

business. The figures we have accumulated prove invaluable sales arguments. We can actually show a prospect a comparison of costs and that of operations under local conditions and over local roads. We can tell a farmer that a truck is a good investment and back up that assertion with actual figures.

#### No Profit in Shrinkage

"Take the matter of hauling hogs, for instance, a hauling job found on every farm. Every farmer knows that there is considerable shrinkage when hogs are hauled from the farm to the railroad loading station. We actually weighed the hogs at the farm and again at the local stockyard, comparing the shinkage of a load hauled by horses with the loss suffered by those hauled in a truck. We can show the farmer where he can save a good many dollars by hauling his hogs by truck. If a farmer doubts our figures, we are willing to demonstrate and let him do the weighing. There is no evasive answer to such sales arguments. Too many truck sales are attempted when the salesman only knows in a general way that a truck is economical transportation. Actual figures and facts clinch the sale.

"It doesn't pay to be niggardly with demonstrations. The dealer who jumps on his trucks and runs out to the country to demonstrate can always find a chance to demonstrate. It follows that he will always have plenty of live prospects on the string. If the truck manufacturer would put softer upholstering on their truck seats they would sell more trucks. The seats seem to be too hard for most salesmen. A demonstration may not bring an immediate sales but it is sure to bring indirect results. If we haul a load of hogs for Jones and present our sales arguments to him, Jones may not sign an order for a truck, but if we have actually sold him on the truck idea, we have promoted business. As a matter of

(Continued on page 23)

# Does Your Service Department CARRY THE LOAD?

Who's Paying for Some of the Work?

***This Article Tells Why Some Service Departments Cannot Show a Profit. It May Fit Your Case***

By C. P. SHATTUCK\*

**L**ACK of capital and unwise trading in trucks are not entirely accountable for dealer mortality. Many dealers fail because they thought they were making money when they were actually losing it. This applies particularly to the young dealer who has not been tried by the fire of experience.

The service department has in many instances accelerated the dealer's slide down the toboggan of bankruptcy. Many dealers state that they could make money if it wasn't for the service department. At one time certain individuals in the automotive industry advocated that dealers should give up service entirely, and that the buyers should go to an independent shop when in trouble. This propaganda has greatly helped the independents who have not been slow to capitalize on the weakness of some dealers.

Generally the dealer has two alibis to offer for failure of the service department. First, he says, it is an expensive department to maintain, full of grief and costly to the sales department which has to provide the wherewithal to support it. Second, it cannot be made to pay a profit under the most favorable conditions unless the labor rate is boosted to an abnormally high rate. "And," some dealers say, "if we got the price we ought to receive, one mechanic could do all the work we would get and have time left to attend ball games, etc." Both of these statements and others of a similar nature are bunk, pure bunk.

#### Service Department Carries the Load

Any service department—small, medium or large, irrespective of the number of men employed, grade of the manager, lay-

\*This is the third of a series of articles on service by Mr. Shattuck, dealing with the installation of flat-rate, piece-work and selling service. The fourth will appear in an early issue.—Editor.

out and equipment—will never show a profit if the distribution of the overhead of other departments is such that the service station carries the load. Profit cannot be made, and many times even cost, if the dealer insists that the service department perform certain work at cost. The practice of charging only cost for preparing the new truck, for bringing chassis from the railroad terminal, doing work under the free service plan or warranty period, washing and lubricating, inspection, overhauling used trucks and numerous other

work that is done in connection with new truck sales and is not service in any sense of the word. Any labor performed by the service department should be paid for at list price. The sales department should be charged the same price as the owner.

Many dealers are going to take exceptions to this statement and some will say it will cut into their profits on new truck sales. That is one reason why the plan is advocated. If the new truck carries its proper share of expense, preparation, free service, inspection, warranty, etc., the dealer would realize that there is not so much gross profit, or net, in the sale and he would be obliged to allow less for the old truck he purchases. And if every dealer would get down to brass tacks and do the same, the trade-in problem would be nearer to a solution.

It is pure bunk when any dealer says his service station cannot be made to pay a profit and more bunk when he remarks he would have to charge unreasonable prices for the labor or he would lose his customers. The customers who go elsewhere for service, mostly to independent shops, do not get anything for nothing and know that the shops they

patronize make a profit. Many owners quit the dealer after the giving period is closed. But these same owners have to pay elsewhere. Now what is wrong with your service, Mr. Dealer?

The answer is—your price!

If the independent can perform any given operation cheaper than you can, and make a profit, and you make only a loss, then you ought to be convinced something is wrong and take the time to investigate. You may find that the independent charges \$1.25 the hour and you \$1.50, but you lose money.

Did it ever occur to you, Mr. Dealer, that your service department is operating



"It Belongs on the Sales Side"

items that take time are the factors largely responsible for the non-paying service department.

It is nonsensical for any dealer to argue, and many do, that it makes no difference in the final analysis—that the money all comes out of the same pocket, the dealers' bankroll. There is a vast difference however, when the service department is made to bear more than its share of the burden of overhead—and the items named are overhead—it cannot progress except in the wrong direction. The items mentioned, and many others, coming under the heading of "overhead" should be charged to the sales department, for it is

under a great handicap by carrying too big an overhead due to the burdens placed upon it by the sales department as previously outlined? Many hours of labor are charged against the service department for doing work which should have been charged to the sales department. The independent service station has little if any of this burdensome overhead.

#### The Service Executive

If your price on labor is high and no profit is made, and if the overhead is properly proportioned, then something is radically wrong in the service department. Failure of the department to pay under favorable conditions may be blamed to the dealer.

No service station can be developed into a profitable business if the service head is merely a head mechanic and paid a mechanic's salary. Such a man works hard—mechanically—doing the best he can, but he is either too busy on actual work or lacks the ability to be a business manager. If the man shows any business ability, endeavors to develop service selling, and tries to sell you on expanding the department by installing equipment and system, you deal him the solar plexus punch, with your alibi that "We can't afford to spend money in a losing game." This breaks down his morale and that of the shop, because the mechanics and other employees always know the inside.

Many a service head has worked out the ground work and plans for good service which would not only be productive but profitable but when they call for any expenditure, the dealer hauls out the old statement, full of red ink, and the poor service head is squelched once more. In fairness to the dealer, however, it must be admitted that he leaves the preparation of the cost figures and statement to others. He must because he is too busy trading trucks. And those who prepare these figures have no interest in service. Their interest is in the sales end.

All this is not new. The service managers know it. So do the mechanics and other employees in the service department. A few dealers know of the conditions and some have remedied it by giving the service department a square deal. These dealers are going to progress. The others are not.

#### Is There a Remedy?

Can the service station be made to pay a profit and the owner get better service at less cost? The answer is **YES** to all questions. It can be accomplished by first placing the service department on a business basis and operating it on busi-

ness principles. It must be considered and run as a separate department of the dealer's establishment not have the sales end tied around its neck like a millstone. If this be done the red ink will disappear, black will show and best of all, **sales of new trucks will increase.** And better

at a very reasonable figure and show you concrete results. Many in the industry have made such arrangement and have plugged leaks which they never dreamed of.

If you wish to be your own bookkeeper in your service station you can but it will be cheaper to engage one for your time can be best employed in selling and supervision. But do not instruct the accountant along the old lines—load up the service station with overhead, but let him work out the real service station overhead.

#### Items Charged to Overhead

Now what is the real cost of labor and what overhead should the service department carry? Certainly not non-productive labor for the sales department, as previously pointed out, so this factor will be eliminated at the start. Here are the overhead items to be ascertained and the service station's proportion should be fairly worked out and charged to it. Rent, light, heat, power, superintendence or supervision, telephone, telegraph, advertising, freight, express, parcels post, cartage, non-productive labor and come backs, materials and supplies, stock losses, license fees, repairs to plant, equipment, etc., elevator, insurance, oil and fuel waste, printing and stationery, bad bills, collections, office expense, damaged parts, watchman and floormen, unproductive or idle time, etc. In fact, the overhead should include all expenses paid out for the service department.

The business type of service head in taking over this work will see to it that he gets an even break on the proportion of certain overhead, such as rent, insurance, taxes, light, heat, power, telephone, express, stationery, office expense, etc., and that many of these items are based on the number of square feet space the service department occupies. Incidentally

he will see to it that when the sales department uses space in the service department to store new chassis and trade-ins that the service department is credited.

Considering next machinery, tools and shop equipment. That on hand should be inventoried and if not charged off a certain per cent should be arrived at to charge off the equipment. New shop equipment must be bought from time to time and the conventional method is to set

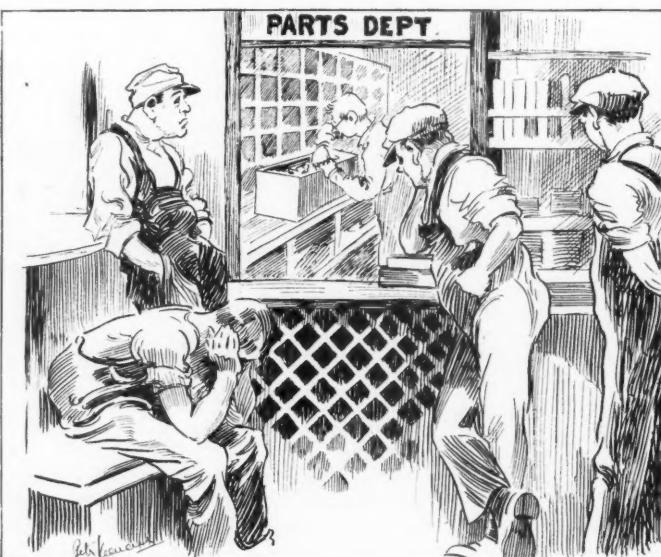
aside a certain per cent of the profits annually to purchase needed equipment. As many truck service stations show no profit—according to the dealer—these shops have no money to buy equipment. There must be a charge, a reason-



"Productive Time"

salesmen will result, for there will be less selling on price and more merchandising what the truck is, what it will do and what it will cost to operate.

The first step is to organize the service department and place at its head a business man, a man who will insist that a real accounting or cost keeping system is installed. The executive will find out what labor costs, add the overhead, affix a selling price that will leave a profit and **then get out and sell his goods.**



"Non-Productive Time"

If the dealer is new and his organization small, as many are, he must have some good bookkeeping system. It is not necessary to engage an accountant or bookkeeper permanently, as there are many young men who will give part time

able per cent, to care for the repairs of the equipment, to buy new parts for same and new tools. Some figure 25 per cent off per year for four years. Others assume a five year basis. In any case the rate should be high enough to wipe out the indebtedness of three, four or five years, and at the same time include replacement of components and repairs. Too many service stations pay \$50 for a piece of shop equipment and make no charge against it. Any and all equipment should be charged and credited. The charges should carry the price paid, interest, depreciation and repairs. The credit should be the per cent of the total decided upon per year or month. This subject, however, will be treated later in an article dealing with buying shop equipment.

Another item of overhead is the service truck or other cars used by the station. If a new chassis and body, 40 per cent should be charged off the first year and 20 per cent thereafter until paid for. Fuel, oil, tires and repairs should be included and all repairs should be charged at list price, not cost. Other overhead sometimes overlooked is the cost of supplying uniforms, washing same, soap, laundry, lavatory, sawdust, material and supplies used by the mechanics. Some stations buy a few lighting bulbs from time to time and these are overhead. Similarly, the drop light cord have to be replaced and this is an overhead. This may all appear quite elementary but it is the small items not charged or accounted for that make the overhead mount and profits fall. These items may be called indirect costs but they are the cost of doing business and do not include salaries or labor.

There is another item that must go in the overhead and that is supervision. It includes the service manager and his assistant, the tester, inspector or any other employe who does not produce. If any employe produces on a part time basis, then the time that is not productive is charged to overhead. Parts, equipment, or supplies sold at a profit or loss, must not be credited or charged to the service department, nor should any of the overhead, expenses, etc., of the parts and supply and equipment departments be charged to service. These departments must be treated as entirely separate and as accounts on the books.

Salaries of the mechanics and helpers are direct costs in service and are the most important, for the time has arrived when labor must be treated as a commodity, have a definite cost, profit and selling price. Unless the actual cost of labor, of performing any given operation be definitely known, and that of overhead, and overhead properly distributed, it is useless to attempt any flat rate, piece work or estimate system. Furthermore the number of productive and non-productive hours must be known accurately.

If a mechanic works 8 hours a day and 6 days a week, he has 48 productive hours—IF—the entire time is sold. But if he works 40 hours and produces salable labor and spends 8 waiting for work, cleaning machinery, putting away tools, etc., he has but 40 hours productive time.

The 8 hours he does not produce is **overhead**.

#### There's a Difference

Labor must have a definite cost even on the hour basis. The cost is not the hourly wage plus the ordinary overhead but both these plus the idle time. Too many do not consider the non-productive time and believe if the wage is 50 cents an hour and the overhead 70 cents that the cost is \$1.20. Also if the customer pays \$1.50, the profit is 30 cents an hour. It is if the mechanic produces every hour. But suppose he only is productive 38 hours a week. The wage and overhead is \$1.20 the hour for 48 hours or \$57.60, the actual cost to the dealer. The dealer receives pay for 38 hours or \$52.00. There is a loss of \$5.60.

Putting it another way. The overhead and salary of the mechanic is \$57.60 for 48 hours. He produces but 38, dividing \$57.60 by 38 results in \$1.51 and a fraction, which is the actual cost and overhead per hour. The distribution of the overhead referred to can be easily computed regardless of whether the shop has one man or many. It should be borne in mind, however, that the overhead (distribution) will be less if two, three or four men are employed because if the overhead of the shop is 100, for example, and there are four men employed, the overhead of each will be 25 on productive time, to which must be added that incurred by non-productive time.

To arrive at real costs, the overhead should be determined separately and divided among the number of men. The factor may be in hours and must consider the idle time to arrive at the real figure per hour for overhead. The actual cost of labor, wages paid the mechanics, should also be computed separately and consideration here must be given for idle time in arriving at the cost per hour.

The labor cost per hour is that which is paid to mechanics daily and weekly. It is the cost to the service station per hour per production hour, not the amount divided by the number of hours he works unless he produced his entire time. The following table shows the cost per hour full time production and 38 hours out of 48.

Weekly Rate	Cost per Hour 48 Hours	Cost per Hour 38 Hours
\$20	.417	.555
25	.52	.695
30	.677	.833
35	.729	.921
40	.833	1.112
45	.937	1.18
50	1.04	1.31

The actual cost per hour is obtained by adding the total overhead cost per hour and the labor cost per hour. The actual cost per hour in many cases is surprising and it accounts for much red ink. It is obvious that there is less overhead per hour with five men than one, which means that the more men employed the less overhead cost per man per hour. But on the other hand the more men the **more work must be done** and the more it **must be sold** to keep production on an even keel.

If more truck dealers would analyze their service overhead they would find it too high and reduce it. Reduction by the

firing process is not the remedy unless the men are not worthy of their hire. Reduction of overhead in the average truck dealer's service station is possible by first not charging in any overhead that belongs in the sales department, parts or other departments. Reduction in overhead and consequent cost of maintenance to the truck owner can be reduced by eliminating the idle time which has been shown in this article as being very expensive. Idle time is reduced by the flat-rate and piece-work systems which will be discussed in the next article and instructions given to lay the foundation of same. But it will be futile for any service station to attempt either system until the cost of overhead and labor is definitely determined.

## Selling Trucks on an "Investment Basis"

(Continued from page 20)

fact, Jones will repeat our figures and arguments to his neighbors. We have created several prospects at one demonstration."

#### Truck Paper Good as Gold

Many of the trucks sold by Miley Bros. are placed with people of small means. Consequently, sales are often made on the instalment plan. Most of the paper is carried by the Mileys or handled locally.

"Truck paper," says Miley, "is as good as gold, provided, of course, that the buyer really needs a truck. We refuse to sell a truck to the man who doesn't need one. Consequently, our truck paper is always safe. If a man really needs a truck, it will pay for itself. If it doesn't, he hasn't any business owning a truck and we are simply hurting our business if we make such a sale."

Miley Bros. are not by any means new hands at the automotive business. Back in 1907, Jack Miley bought his first car, a one-cylinder Reo. In 1908, he traded in his one-cylinder model and took out a new "two lunger." Shortly afterwards, Miley Bros. took the agency for the Reo, a contract they have kept ever since. The business policies of the company are based on actual experience and fact. That their sales policies are entirely workable is demonstrated by the fact that their truck sales in 1923 showed an increase of 110 per cent over those in 1922. So far this year (the first six months) they have made around 75 truck sales, about 50 of which comprised new trucks. Which is an excellent record when we consider that Chariton has a population of only about 5,500.



**A SPEEDY TRUCK \$1095**  
 SELLS ON SIGHT  
 SWELLS YOUR PROFITS

**WILLYS-KNIGHT MOTOR**

Chassis f. o. b. Detroit

Quick sales and sure profits for dealers handling this new Speedy Truck. Meets every need of the 82% market for trucks of 1 ton and under.

Every user of a light delivery truck is interested. Our national advertising in the Saturday Evening Post and other publications has created a nation-wide demand. You can "cash in" on it NOW.

This is the *only* motor truck in the world with the Willys-Knight sleeve-valve motor—the motor that *improves with use!* Think what this means to you as a dealer!

No competition in value in the light delivery field. Every conceivable business in your city has use for a vehicle like the Federal-Knight. The quality is right — the price is right.

Valuable territory still open. Write TODAY for full particulars of the Federal-Knight franchise.

**FEDERAL MOTOR TRUCK COMPANY**  
 DETROIT, MICHIGAN

**FEDERAL-KNIGHT**  
 A SPEEDY BUSINESS TRUCK



# EDITORIALS



## Recognizing the Dealer

**W**E have given a great deal of study to retail sales statistics of the past and believe we now have a reliable measure of the ordinary seasonal character of such demand, and are in position to gage the current trend with far greater accuracy than has been possible in the past. General Motors policy has been definitely established. We shall maintain a reasonably level line of plant operation in order to gain a maximum of efficiency in manufacturing costs. The trend of sales to consumers will be appraised monthly and production schedules will be adjusted promptly if there is any indication of an altered trend of retail demand. Manufacturing schedules will be kept in line with the trend of retail sales as we see it, and no General Motors Division in the future will require or permit its dealers or distributors to carry stocks beyond what is logical and economical."

The foregoing which is part of a statement made recently by Alfred P. Sloan, Jr., president of the General Motors Corp., indicates the fact that one of the greatest organizations of its kind in the world realizes that if its dealers cannot make money, the factory cannot either.

If more concerns in the automotive industry would take a similar stand, the turn-over of dealers each year would be cut to the minimum in a very short time. No factory can gain the respect and loyalty of its dealers by crowding them with more than they can sell at a profit. Time and again this publication has propounded the policy that production and sales departments should work hand in hand. It may produce conditions occasionally when demand is away ahead of production—but prices will not be sacrificed.

## Where's Your Overhead?

**T**HE reason some Service Stations can't show a profit is because they are charged up with a lot of unnecessary expenses which ought to be charged to the sales department.

Then there are some dealers who think their service departments are making a profit on labor because they charge \$1.25 per hour for labor and they pay their mechanics 80 cents or less per hour. They figure they are making a profit of 45 cents per hour or more on the labor charge.

If more of the expenses which are placed against the Service Department were charged against the sales end, many Service Stations would show a real profit. And many dealers would be less anxious to give away some of their profits on trade-ins.

The article on page 21 of this issue clearly outlines some of the conditions which are all too apparent in many dealer establishments today. The industry has reached the point where the dealer cannot make money in his service department unless he puts this department on a business basis.

This means that the dealer must first of all study his service department and analyze it thoroughly. He must be willing to put someone in charge who can develop business for that department just the same as the sales department does on new vehicles. He must be willing to spend money on machinery and time-saving tools otherwise he will not be able to meet competition.

## On New Models

**I**NCIDENTALLY the motor truck industry hasn't the new model fever to the extent that is noted in the passenger car field, but it has its new models. The latest additions have taken the form of light delivery trucks, produced mainly by manufacturers who have already an established line of larger sizes.

Now we haven't the slightest objection to any manufacturer producing any new models, if he knows that his dealers need such a model to round out their line. Neither do we object to any manufacturer producing a new model for the benefit of his dealers, provided he is producing a job that will open up new markets for them. Some may say it is none of our business anyway.

But, we certainly believe that it would be to the best interest of the manufacturer to first decide what he is going to do with the job after he builds it. There should be a plan or definite idea in back of every new job that is announced, not a set of chassis specifications. Is the new job designed for some particular businesses; has it an especially attractive price; are certain makes of bodies recommended for it; is there something about it that is a radical departure from other makes; does it carry a particular service feature? These are just a few of the things that should be considered before a new model is announced.

# News of the Trade

## M. A. M. A. Convention Program Nearing Completion

"Getting Ready for Better Business" will be the theme of the annual convention of the Motor and Accessory Manufacturers' Association, to be held in Cleveland, October 15-16-17. Recognizing the signs of improving conditions apparent on all sides, the program committee of the association has drafted plans for a meeting which will suggest better business methods for all divisions of the automotive equipment industry. Special attention will be given to the immediate business outlook and to the prospects for 1925.

The first day's session will be devoted to the business outlook, with a keynote address by an international authority on business. This will be supplemented by discussions of the automotive outlook by representatives of several national associations in the industry. The evening of the first day will be given over to entertainment to be arranged by a committee of Cleveland members.

On the second day the convention will study, "Better Merchandising as the Foundation of Better Business." Addresses by men in the automotive industry and other merchandising and advertising authorities will take up distribution through jobbers, distributors and other sources employed in the industry. There will also be a group of speakers to discuss the foreign trade opportunity and the best means of taking advantage of it.

The third day's session will be devoted to credit work, with separate discussions on handling manufacturers', jobbers' and foreign credits.

The convention will be presided over by G. Brewer Griffin, head of the automotive division of the Westinghouse Electric & Manufacturing Co.

The program is being developed by a committee headed by E. P. Chalfant, chairman of the board of the Gill Mfg. Co., with the following associates: M. H. Tisne, A. Schrader's Son, Inc., A. H. Grayburn, Norma-Hoffman Bearings Corp., J. F. Kelly, Electric Storage Battery Co., B. M. Asch, Asch & Co., J. Lorentz, Laidlaw Co.

C. E. Thompson, president of the Steel Products Co., Cleveland, will head the Cleveland committee for reception and entertainment.

In order to keep members informed regarding plans for the 1925 National Automobile Shows at New York and Chicago, the show department of the Motor and Accessory Manufacturers' Association has launched a publication "Show News," the first issue of which appears this week with four pages.

"Show News" will be issued frequently and will confine itself entirely to information on shows in which the M. & A. M. A. participates in the management and assignment of space.

## Tire Men to Gather in Akron, Ohio, Nov. 18-20

The Fifth Annual Convention of the National Tire Dealers' Association will be held in Akron, Ohio, November 18, 19, and 20. The organization is composed of retail tire merchants from all parts of the United States.

Akron was awarded the fifth convention because it is the largest rubber manufacturing center in the world, and an ideal city for a gathering of tire dealers.

More than 2000 tire dealers, members of the Association and non members, from all over the country are expected to attend. The convention will be held in the Armory, which has a seating capacity of 2500. An interesting program has been planned for the entertainment of the convention guests. Arrangements have been made for trips through the rubber plants, and speeches by high officials in the tire and rubber industry.

## Electric Vehicles to be Featured at New York Electrical Show

With exhibits arranged by all the leading manufacturers represented in the Metropolitan District, the electric vehicle section of the New York Electrical Exposition this year will be a complete automobile show in itself. The show is to be held at the Grand Central Palace, Lexington Avenue and Forty-sixth Street, New York, from October 15 to 25.

Occupying the entire northern half of the second floor of the Palace, the electric vehicle exhibit will consist of street trucks of all sizes and types, industrial trucks, storage batteries, battery charging equipment and electric garage accessories.

The exhibitors will include the following: Commercial Truck Company, Electric Truck Corporation; O B Electric Vehicles, Inc., Walker Vehicle Company, Ward Motor Vehicle Company, Baker R & L, Edison Storage Battery Company, Electric Storage Battery Company, General Electric Company.

The General Motors Truck Co., Pontiac, Mich., reports that the municipal authorities of New York City have just purchased 125 heavy-duty G. M. C. trucks which are to be used mainly in garbage disposal and street cleaning work.

The Mason Tire & Rubber Co. reports that sales for August are expected to exceed the average for the first seven months of this year when sales amounted to 831,288. Company has retired all direct bank loans and has taken up those of the last maturities in September in advance of the maturity dates. Current indebtedness has been reduced from \$1,181,000 on May 1, to \$757,000 as of August 1.

## Replacement Parts Makers Enrolled in Association

Excellent progress toward a permanent organization is being made by the National Standard Parts Association, following the preliminary meeting held in Detroit last May of manufacturers and jobbers of dependable replacement parts.

At that time an executive committee was named and empowered to pass upon all applications for membership in the permanent organization, these applications to come up for final action at a meeting to be held in Chicago during the week of Nov. 10.

To date 22 replacement parts jobbers and 19 parts manufacturers have been accepted for membership by the executive committee, and 12 applications are now under consideration.

## Tire Dealers Reducing Stocks

According to George G. Burger, president of the National Tire Dealers' Association the July 31 questionnaire has been completed, and a very large increase has been noted in the number of members reporting. The answers to the questionnaire are as follows:

Inventories, tires and tubes on hand, have shown a very large decrease. This is a very good sign that dealers are reducing their stocks. Sales have shown a very large increase. Purchases are about fair. Collections reported about fair. Business conditions, majority of members reporting about fair, which is a very healthy sign. The number of members reporting their intention of attending the coming convention, which will be held in Akron, November 18-19-20 is very satisfactory. The members of the National Tire Dealers' Association are very much interested in seeing that a better condition exists between the manufacturer and the dealer, and that improvements will be made by both the manufacturer and the dealer that will put this industry in its rightful place with other old line industries of this country. The convention of National Tire Dealers, which will be held in Akron, is going to be one of give and take, so that the year of 1925 may bring more satisfactory business conditions to both branches of the industry.

The Timken Roller Bearing Co. has declared an extra dividend of 25 cents and the regular quarterly dividend of 75 cents, both payable Sept. 5 to stock of record Aug. 20.

The fifteenth and last of the Delco light beacons that will insure a safe path for the United States Mail Aviators in the New York-San Francisco service, is to be installed at Rock Springs, Wyo., and when completed will complete a continuous lighted path from Cleveland to that point.

## Hoover Steel Ball Purchases Imperial Bearing Company

Of interest to those engaged in the automotive or general mechanical industry comes the announcement that the Hoover Steel Ball Co., of Ann Arbor, Michigan, has purchased the Imperial Bearing Co. of Detroit. The equipment of the latter plant will shortly be moved to Ann Arbor and housed in the spacious building of the Hoover Steel Ball Co.

A desire to render more complete service to manufacturers using balls and bearings as well as to strengthen the organization itself by being able to increase its output and make full use of the large plant at Ann Arbor impelled the motives of the Hoover Steel Ball Co. in broadening its field thru this purchase.

Plans call for a program that will not affect present customers who have depended upon the parent company for their supply of steel and other metal balls for this part of the business will function the same as in the past. New machinery and equipment in addition to that purchased from Imperial is being added so that Ball Thrust Bearings, Roller Bearings and Ball Retainers will be produced for manufacturers using such products.

Stress is laid on the fact that the new program does not include the manufacture of Annular or Radial Ball Bearings now being produced by other bearing companies manufacturing these high-grade bearings for automotive and other machine applications.

The personnel of the company remains the same with H. D. Runciman as general manager, except for S. S. Strickland, manager of the Imperial plant, who will be manager of the bearing division. Mr. Strickland replaces as a director, Mr. Dobson, who has severed connections with the Hoover Steel Ball Co.

## Detroit Chevrolet Dealers Adopt Insurance Plan

The Detroit Chevrolet Dealers' Association, comprising all of the Chevrolet dealers in Wayne County, has adopted the deferred payment guaranty insurance plan, under which time payment buyers are protected against inability, through illness or accident, to complete payments on their cars. The plan is that of the Commercial Casualty Co. of Newark, N. J., and applies to all buyers who wish this protection. It is simply a health and accident policy applying on car payments.

**The Strang Safety Service Motor Lines** have added one new street-car type bus (Menominee) 18 passenger. The chassis is a regular bus chassis 175 in. wheelbase with a 6-cylinder Wisconsin bus engine. The body was built by the Echland Body Company of Minneapolis.

The Strang Safety Service Motor Lines operate over a route of 80 miles round trip between Janesville, Willowdale, Footville, Orfordville, Brodhead, Bluff View Park, Juda, and Monroe.

## COMING EVENTS

### CONVENTIONS

**American Electric Railway Assn.**—43rd annual convention to be held October 6 to 10, 1924, at Young's Million Dollar Pier, Atlantic City, N. J. Also a display of electric cars, buses and accessories. James W. Welsh, exec. sec., 8 W. Fortieth St., New York City.

**American Gear Manufacturers Assn.**—Mid-summer meeting to be held at Briarcliff Lodge, Briarcliff Manor, N. Y., from October 16 to 18, 1924.

**American Road Builders Assn.**—Convention and road show to be held January 6 to 9, 1925, at the Coliseum, Chicago. Chas. M. Upham, director, State Highway Commission, Raleigh, N. C.

**American Society for Steel Treating**—6th annual convention to be held September 22 to 26, 1924, at Boston, Mass. Also a Steel Exhibition.

**California Automobile Trade Assn.**—Annual meeting to be held in October, 1924. Date and place to be announced later. R. W. Martland, Mgr., Oakland, Cal.

**Iowa Automotive Merchants Assn.**—Annual meeting to be held November 13 and 14, 1924, at Des Moines, Iowa. A. J. Knapp, Sec.-Mgr.

**Michigan Automotive Trade Assn.**—18th annual convention to be held in Detroit, Mich., January 21, 1925. W. D. Edendurn, Mgr., Hotel Addison, Detroit.

**Motor & Accessory Manufacturers Assn.**—Annual convention to be held at Cleveland, October 6 to 8, 1924. M. L. Heminway, Gen. Mgr. E. P. Chalfant, chairman of the committee, which will handle the affair.

**National Hardware Assn.**—30th annual convention to be held at Hotel Marlborough-Blenheim, Atlantic City, N. J., from October 14 to 17, 1924. The Automobile Accessories Branch will hold its meeting on October 13, at Hotel Shelburne. T. James Fernley, Sec., 505 Arch St., Philadelphia.

**National Safety Council**—13th annual safety congress to be held September 29 to October 3, 1924, Louisville, Ky. W. H. Cameron, managing director.

**National Standard Parts Assn.**—Meeting to be held week of November 10th (tentative), 1924, at Chicago.

**National Tire Dealers Assn.**—Annual convention to be held November 18 to 20, 1924. Hosts: Akron Retail Tire & Accessory Dealers Assn.

**Ohio Automotive Trade Association**—Annual convention to be held December 10 and 11, 1924, at Columbus, Ohio. E. J. Shover, Mgr., 310 Majestic Bldg., Columbus.

**Pennsylvania Automotive Assn.**—Annual convention to be held October 17 and 18, 1924, Wilkes-Barre, Pa. R. C. Duffus, Mgr., 302 Security Bldg., Harrisburg, Pa.

**Texas Automotive Dealers Assn.**—Annual convention to be held in March, 1925, at Austin, Texas. W. A. Williams, Mgr., San Antonio.

### SHOWS

**Athens, Pa., September 15 to 20, 1924**—3rd annual automobile show to be held in conjunction with the Inter-State Fair. Passenger cars, trucks, tractors, and automotive equipment. Chas. E. Miller, Mgr.

**Boston, Mass., October 10 to 17, 1925**—World's Rubber and Tropical Exposition will be held at Mechanics Hall. Chester I. Campbell, Mgr.

**Chicago, II., October 21 to 27, 1924**—National Transportation Show to be held at the American Exposition Palace under the auspices of Motor Truck Industries, Inc. Capital Bldg., 120 Madison Ave., Detroit. Delivery systems, omnibuses, bodies, trailers, etc. Wm. N. Hallanger, Gen. Mgr.

**Chicago, III., November 10 to 15, 1924**—6th annual show of the Automotive Equipment Assn. to be held at the Coliseum (50,000 sq. ft.). Automotive, shop and service station equipment. A. B. Coffman, Mgr.

**Chicago, III., January 24 to 31, 1925**—National Automobile Show to be held under the auspices of the National Automobile Chamber of Commerce. Coliseum and First Regiment Armory.

**Dallas, Texas, October 11 to 26, 1924**—Annual auto show will be held on the Fair Grounds under the auspices of the Dallas Automotive Trade Assn.

**Detroit, Mich., January 17 to 24, 1925**—24th annual show to be held at Convention Hall, under the auspices of the Detroit Auto Dealers Association. Passenger cars, trucks and automotive supplies. H. H. Shuart, Mgr.

**El Paso, Texas, September 20 to 25, 1924**—Annual auto show to be held on Exposition Grounds, under the auspices of the Auto Department of the International Fair Association. W. J. Wile and E. C. Held, General Chairmen.

**Grand Rapids, Mich., September 15 to 19, 1924**—9th annual automobile show to be held in conjunction with the West Michigan State Fair, at the Automobile Exhibition building, and on the Fair Grounds. Passenger cars, trucks, tractors and automotive equipment. Wm. T. Morrissey, Mgr., 220 Ashton Bldg.

**Indianapolis, Ind., September 1 to 5, 1924**—Automobile show to be held in conjunction with the Indiana State Fair on the Fair Grounds. Passenger cars, trucks, tractors, etc. John Orman, Mgr.

**Little Rock, Ark., October 6 to 11, 1924**—Annual show to be held in connection with the Arkansas State Fair. Passenger cars, trucks, tractors and automotive equipment. L. E. Whitman, Pres. Little Rock Auto Dealers Assn.

**Newark, N. J., January 10 to 17, 1925**—18th Annual Automobile Show to be held at the 113th Infantry Armory (30,000 sq. ft.), under the auspices of the Newark Automobile Dealers. Passenger cars, trucks and automotive equipment. Claude E. Holgate, Mgr., Chamber of Commerce Bldg.

**New York, N. Y., October 15 to 25**—New York Electric Exposition, including exhibits of leading electric vehicle and parts manufacturers. Grand Central Palace, Lexington Ave. at 46th St.

**Oklahoma City, Okla., September 20 to 27, 1924**—Annual show to be held in conjunction with the Oklahoma State Fair and Exposition at Automobile Bldg. (approx. 23,375 sq. ft.) Passenger cars and automotive equipment, trucks and tractors, outside space. W. H. Birdseye, Mgr., P. O. Box 974.

**Shreveport, La., October 30 to November 9, 1924**—Annual auto show to be held in connection with the State Fair of Louisiana. Passenger cars, trucks, tractors and automotive equipment. W. R. Hirsch, Sec.-Mgr.

### N. A. D. A. MEETINGS

**January 5, 1925**—Convention in connection with a show at Hotel Commodore, New York City.

**January 29 and 30, 1925**—8th annual convention to be held at Hotel La Salle, Chicago. Lynn M. Shaw, Asst. Gen. Mgr., 329 N. Grand Ave., St. Louis, Mo.

### N. A. C. C. MEETINGS

**October 21 to 24, 1924**—Production meeting at Detroit, Mich.

**November 18 and 19, 1924**—Joint service meeting with the S. A. E. to be held at Cleveland, Ohio.

### S. A. E. MEETINGS

**September 24 and 25, 1924**—Automotive Transportation Meeting at New York City.

**October 22 to 24, 1924**—Production Meeting at Detroit, Mich.

**November 18 and 19, 1924**—Service Engineering Meeting at Cleveland, Ohio.

**January 8, 1925**—Annual Dinner to be held at New York City.

**January 20 to 23, 1925**—Annual Convention at Detroit, Mich.

**January 21, 1925**—Annual Carnival scheduled for Detroit, Mich.

**The Stebbins - Roberts - Buquoir Co.**, which has been distributing Standard gasoline and Commercial electric trucks in Southern California, has withdrawn from the truck business. Under the name of Six Wheels, Inc., the company will devote its activities exclusively to the production and sale of an auxiliary rear axle for converting the standard four wheel truck into a six wheel unit. It is announced that arrangement has been made to maintain production and distribution headquarters in Detroit as well as Los Angeles.

## General Tire Enlarges Factory

The General Tire & Rubber Co., Akron, Ohio, has begun the construction of three additional wings to its factory, in the hope that the work will be concluded in time to augment tire production within a few months. Just a year ago General added three factory wings to take care of the growth of the demand for General tires, and a month ago a new power house was placed in operation. Orders have increased so steadily, however, that it has been found impossible to take care of present business and future growth without still greater production, hence the new work that is now being started.

At the same time that the building program is announced, General has notified its salesmen to take on no new dealers for the next two months. The company has been behind orders all year and every effort is being made to assure present dealers of plenty of stock, until the factory additions are in operation to give relief. Following is a quotation from a letter of President Wm. O'Neil to salesmen on the subject:

"We believe you fully realize the necessity of confining shipments to our present distributors at this time. Our previous action in turning down all new business in March, April and May of this year and the completion of our new power house recently, enabled us to stay somewhat even with the requirements of our distributors, but we find that we have underestimated the rate at which their demand is growing and it is again necessary for us to adopt the policy of restriction against new accounts."

The company makes it plain in its announcement that it has not departed from its established policy—that it is not taking on the business of car manufacturers, but that the sales which have made the most notable year in the history of the concern are based on consumer demand, through the dealer.

**The Hudco-Ford Company of America**, Philadelphia, has announced that it has completed arrangements with the Rock Island Manufacturing Company of Rock Island, Illinois, for the manufacture and distribution of its Hudco Transmission Cover for Fords, under license. This step is a direct result of increased demand which cannot be adequately taken care of unless the manufacture and distribution are conducted by the same company.

## Cromwell-Dodge Will Finance New York Dodge Dealers

Incorporation under the New York law of the Cromwell-Dodge Co., Inc., with a capital of \$200,000 and a surplus of \$50,000 is announced and the Superintendent of Banks of the State of New York has formally approved the company's certificate and authorized it to begin business.

This New York incorporation, however, does not mean the launching of a new business, for the Cromwell-Dodge Co. has been operating as a Delaware organization since June, 1923, with headquarters in Philadelphia and branches in Pittsburgh and New York, financing Dodge dealers exclusively. The New York law specifying that no corporation can go under the State banking law with a preferred stock, it was decided to incorporate under the new name of Cromwell-Dodge Co., Inc., and overcoming the obstacle to New York operation.

No change in personnel has been made and the business will be carried on as before, with both corporations, New York and Delaware, functioning. Eventually it is planned to make the Delaware organization the holding company and the New York one the operating concern.

Officers are: J. H. R. Cromwell, president; Horace E. Dodge, Jr., vice-president; Fred A. Weber, Jr., treasurer, and Austin W. Beetle, secretary.

## Factory Branches Established in Los Angeles

Factory branches have been established in Los Angeles within recent weeks by the American-La France, Federal, Gotfredson and Yellow Cab Company. In all instances substantial buildings have been occupied, the Gotfredson purchasing the site and erecting a structure. At this time the Pierce-Arrow and White trucks are the only makes represented by dealers who also handle passenger cars.

## Rognon Planning Service Building

Rognon & Co., at present operating a large independent garage in New York City, is planning a large service building in Long Island City to be devoted exclusively to rebuilding cars and trucks. At present the plans include a large two-story building with a part third floor. Production methods of tearing down and assembly will be used. Work will be largely concentrated on vehicles for fleet owners.

### U. S. Department of Commerce Production Figures (Number of Machines)

	Passenger Cars			Trucks		
	1922	1923	1924	1922	1923	1924
January	81,696	223,822	*287,353	9,596	19,732	28,922
February	109,171	254,782	*336,374	13,360	22,173	31,151
March	152,962	319,789	*348,356	20,036	35,284	*34,109
April	197,224	344,661	*337,045	22,665	38,085	*36,154
May	232,462	350,460	279,439	24,120	43,730	33,374
June	263,053	*337,442	217,927	26,354	41,173	27,863
July	225,103	*297,413	237,652	22,083	30,692	25,224
August	249,498	*314,431	.....	24,711	30,872	.....
September	187,711	*298,964	.....	19,495	28,578	.....
October	217,582	*335,041	.....	21,824	30,139	.....
November	215,362	*284,939	.....	21,967	28,073	.....
December	208,016	*275,472	.....	20,394	27,762	.....

\* Revised.

## Utility Trailer Building New Plant

The Utility Trailer and Manufacturing Company, of Los Angeles, is erecting a new plant at a cost of \$150,000. The building is 120 by 180 ft. in size, of saw-tooth roof construction.

The company has forty-two dealers in the western states as well as maintaining exclusive agencies in the Dutch East Indies, Australia, Mexico, South America and the Hawaiian Islands.

At the present time the company manufactures fifty-two different standard style trailers, ranging from the two-wheel kind with a capacity of five hundred pounds to the big six-wheel solid rubbered tired variety carrying 70,000 pound loads.

The officers of the Utility Trailer and Manufacturing Company are: Ernest Bennett, president; Walter Bennett, vice-president; and H. C. Bennett, secretary and treasurer.

## New Fisher Fast Freight to Have 1½-Ton Capacity

Further details regarding the new Fisher Fast Freight have been released by the Standard Motor Truck Co.

It will have a 1½-ton capacity, a maximum speed of 35 m. p. h. and will carry a price of \$1,295. The engine will be a four-cylinder unit with a 4½-in. bore and 4½-in. stroke. Clutch and gearset will be mounted as units with the power plant, and the latter will provide three speeds forward and reverse. The propeller shaft will be a two-piece design, with three universals, the forward portion of the shaft being supported by a self-aligning ball bearing.

The frame will be a semi-flexible design with straight channel side rails 5 in. deep. The wheelbase will be sufficiently long to take an 11-ft. body. Pneumatic tires, 30 x 5 front and 32 x 6 rear, will be regular equipment.

## Gary One-Ton Delivery Express

A new one-ton delivery express listing at \$1590 and known as model WLD has been added to the line of trucks manufactured by the Gary Motor Corp. This new model comes equipped with 33 x 5 pneumatics front and rear, electric lights and starter, transmission tire pump, speedometer and special color painting.

## Bus Survey in Large Cities

Bus Surveys has recently been inaugurated in seven cities by the Omnibus Corp. of America, of which John Hertz is chairman of the board, to establish the practicability of bus operation. The company does not intend to supplant street car service entirely but to work with street car companies to rearrange and rehabilitate their present service to provide a transportation service more complete than any now operated. Mr. Hertz declares that buses can be operated as an adjunct to rail service in the majority of large cities.

## New Eaton Bus Axle— Model 60,000

The Eaton Axle & Spring Co., of Cleveland, have developed and are now producing an axle especially designed for use on buses, known as "Eaton Model 60,000 Bus Axle." It is a double-reduction full-floating axle. The first reduction is through a spiral bevel gear; the second reduction is through a herringbone gear. The load carrying member is built up of a cast steel center housing, heat-treated, and alloy steel tube, which are heat-treated. Tubes are swedged down at the outer ends, onto which are mounted the wheel bearings.

The bevel and herringbone gears are mounted so as to provide for great ground and body clearance. The overall depth of the housing is 13½ in., thereby giving a ground clearance of 11¼ in. with 36-in. tires. The axle may be used for Hotchkiss Drive, but provision is also made for torque arm.

The axle spring pad capacity is 12,000 lbs. maximum; the torque capacity is 22,000 in. lbs. maximum. The approximate allowable engine displacement is 590 cu. in. The axle is suitable for dual 36 x 6 tires, or dual 34 x 7 tires when using internal brakes. Attachment is made for air cylinder for operating the brakes. The axle, complete, including hubs and drums, weighs approximately 990 lbs. Available ratios: From 4½-to-1 to 7½-to-1. Hubs are made to accommodate demountable disk wheels.

## No Overstocking of Dealers Will be Permitted by General Motors

"Manufacturing schedules will be kept in line with the trend of retail sales as we see it, and no General Motors division in the future will require or permit its dealers or distributors to carry stocks beyond what is logical and economical."

This is General Motors' future sales policy as announced recently by Alfred P. Sloan, Jr., president of the big organization to which belong such powerful units as Cadillac, Buick, Chevrolet, Oakland, Oldsmobile and G. M. C. truck. It follows after a searching personal investigation of dealer conditions by Mr. Sloan and is a logical sequence of the course General Motors has been following for several months in holding down production to meet dealer demands, as borne out by monthly reports on sales to dealers and consumers.

This was discovered following several big production months last winter when it was anticipated that there would be a record breaking spring demand, General Motors planning to have sufficient cars on hand to fill all orders promptly. The expected spring demand did not follow and in consequence dealers of all makes of cars were overstocked. Then General Motors tempered the wind to the shorn lamb, cut production sharply and for the last few months retail sales have been about double factory production.

## USL Battery Prices Reduced

U. S. Light & Heat Corporation, manufacturers of USL batteries, report a reduction of approximately 15 per cent of the list price on their automobile batteries. This brings the list price of the standard USL batteries for Ford, Overland, Chevrolet, etc., to \$20.50, and the same size in the Frontier line to \$15.50.

## Omnibus Corp. Stock Ready

Grayson M.-P. Murphy & Co. and L. & W. Seligman & Co., managers under the Omnibus Corp. plan, announced that temporary certificates for the eight-percent cumulative preferred stock of the Omnibus Corp. are now ready for delivery. Omnibus Corp. was formed by the merger of the Fifth Avenue Bus and Securities Corp., New York Transportation Co., and the Chicago Motor Coach Co.

## Personal Items

**F. Alward**, vice-president of the Rollin Passaic Motor Corp., 219 Ellison Street, Paterson, N. J., announces that he has re-entered the truck field and has taken on the Larrabee Speed Six for Passaic and Morris counties. This is in addition to their regular line, the Rollin car.

**J. C. Ayers** has been appointed general sales manager of Gotfredson Truck Corp., returning to the factory end of the truck business in which he has been a well-known figure for several years. Mr. Ayers started with the Rapid Motor Vehicle Co., later was sales executive with General Motors Truck Co. for six years, and following this work was engaged in distribution of Republic and Denby trucks.

**Alexander W. Barber**, for several years field secretary and later trade observer for the Motor and Accessory Manufacturers' Association, has resigned from that organization. During his connection with the M. & A. M. A. Mr. Barber made a wide acquaintance among the manufacturers, jobbers and dealers of the country, and became familiar with merchandising and credit problems. He has not announced his plans for the future.

**M. W. Bartlett** was elected president of the Splitdorf Electric Co. to fill the vacancy caused by the death of John F. Alvord. Mr. Bartlett has been vice-president and general manager for several years.

**Walter J. Baumgartner**, for the last two years chief engineer of the Garford Motor Truck Co., has assumed the duties of John Kraus, advisory engineer, who recently resigned from the Garford service.

**Joseph C. Bowman**, advertising manager of the Packard Electric Co. of Warren, Ohio, has established his own industrial advertising agency in Cleveland at 1021 B. of L. E. Bldg., under the name of Joseph C. Bowman Co. He is a member of the National Advertisers' Commission and a member of the Joint Assembly of the Association of National Advertisers.

**Stanley Cooper**, recently succeeded Phillips N. Case as advertising manager of the Fafnir Bearing Company of New Britain, Conn.

**Henry M. Cunningham**, formerly on the editorial staff of Electrical World, a McGraw-Hill publication, has assumed charge of publication advertising and sales promotion literature as issued by the Robert Bosch Magneto Co., Inc., maker of magnetos, spark plugs and associated products. Mr. Cunningham

ton has been associated with the Robert Bosch organization since May.

**V. George Harper**, export manager of Victor Motors, Inc., of St. Louis, has gone abroad in the interests of Victor trucks and will visit many of the European countries.

**T. H. King** has resigned as sales manager of the Landis Tool Co., to become treasurer and general manager of the Wayne Tool Co., of Waynesboro, Pa., maker of small tools and automotive equipment. He will assume his new duties Sept. 1. Mr. King was actively connected with the Landis company for 18 years, becoming sales manager 12 years ago. Previous to the Landis connection he was with the B. F. Sturtevant Co., of Boston and his early training in tool manufacturing was acquired at the L. S. Starrett Co., Athol, Mass.

**J. F. Lynch**, who for the past five years has been director of sales for the Kissel Motor Car Company, has recently gone into partnership with Oscar M. Nelson, the present Kissel distributor in Minneapolis.

**B. J. Martin**, Commonwealth Edison Company of Chicago, has been appointed chairman Transportation Bureau, Commercial National Section, N. E. L. A. Mr. Martin succeeds Charles R. Skinner, Jr., of The New York Edison Company, who has headed the activities of the bureau during the past two years.

**Charles W. Matheson**, who recently joined the General Motors Corp.'s executive headquarters as assistant to the president, Alfred P. Sloan, Jr., has been given a definite assignment, it being announced that in addition to this regular duty as Mr. Sloan's assistant, he also will serve as vice-president and director of sales of the Oakland Motor Car Co., a General Motors unit.

**Horace S. Meese**, who has had charge of the transportation engineering and export departments of the Commercial Truck Co., has been made general sales manager, continuing, in addition to his new duties, to have charge of all three departments mentioned. As chairman of the transportation engineering committee of the commercial section of the National Electric Association, Mr. Meese is well known in the industry.

**Grayson M.-P. Murphy**, head of the firm of G. M.-P. Murphy & Co., one of the syndicate managers, along with J. & W. Seligman & Company, that carried out the organization plans of the Omnibus Corporation, has recently joined the Fifth Avenue Coach Company as chairman of the Board of Directors. He was formerly chairman of the Executive Committee of the Interborough Rapid Transit Company operating the subway and elevated lines in New York City.

**J. J. O'Hara** has recently been placed in charge of the sales of Dreadnaught Tire Chains in Ohio, Michigan, Indiana, Kentucky, Tennessee, Arkansas, Mississippi and Erie and Oil City, Pennsylvania. Mr. O'Hara will make his headquarters at Columbus, Ohio.

**W. L. Rowe**, recently associated with Durant Motors, Inc., has organized the Twin-High Sales Corp., to act as distributor for the new Twin transmission for Ford cars in Pennsylvania, Maryland, Delaware, part of New Jersey and Connecticut and the Metropolitan district. Mr. Rowe is located in the Fisk building, New York City.

**T. R. Treanor**, formerly with the Butler Kwiklift Corp., has been named as district manager for the Ball Crank Bumper, covering western New York, by the Cincinnati Ball Crank Co.

**Oscar G. Wolverton**, well known in the automotive field, has been chosen to head a new Yellow Cab branch, now located at 1701 Baltimore Avenue, Kansas City, Mo., for the sale of light trucks, Yellow Cabs and motor coaches.

# Six-Wheel Stages Giving One-Third Greater Tire Mileage

*Sixteen Six-Wheelers Now in Service of the California Transit Company. Equipped With Cast Aluminum Wheels*

THE six-wheel motor stages built and operated by the California Transit Company according to careful tire records are giving one-third greater tire mileage than is obtained from dual tires on stages with exactly the same weight, engine, seating capacity and in fact which differ from the six-wheelers only in the number of wheels. The same tire mileage is obtained in the rear and front wheels of the six wheelers and they average ten miles to a gallon of gasoline.

The first six-wheel stage, built by the California Transit Company's shops according to the original designs was put on

as follows: 30 x 5, 32 x 6, 34 x 7 or 36 x 8 in. The aluminum wheel without hub or felloe band weighs 20 lbs., which is on a parity with the weight of the average wooden wheel. One of the accompanying photos shows two of the aluminum wheels, one with the felloe and one without the felloe band. The felloe band is heated to expand so that it will slip over the aluminum wheel, and when it shrinks it practically becomes a part of the aluminum, in fact it is impossible to remove the band from the wheel without cutting it. The thickness of the aluminum casting is about 5/16 in.

#### Mufflers Have Been Removed

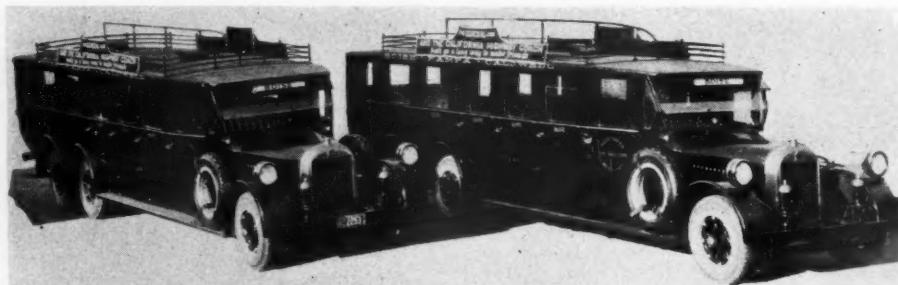
The California Transit Company has taken off the mufflers from all its stages and has thereby eliminated the trouble and expense of keeping this part of the stage in serviceable condition. Substituted for the muffler is a triangular shaped attachment, put on the end of the exhaust pipe.

The attachment is made into the form of a sheet metal triangle which changes the cross section of the exhaust line from a circle to a rectangle 12 in. long and  $\frac{1}{8}$  in. wide. The open end of this triangle is reinforced by three narrow strips spot welded across the  $\frac{1}{8}$  in. opening.

#### Only Two Drive Wheels

In one of the illustrations it will be seen that there are only two drive wheels. These two wheels, including differential, axle housing, brakes, and all other features, are standard in every respect. The second pair of rear wheels are trailers, except that they have a brake equipment duplicating that on the other pair, an equalizer being used to give even distribution of pressure to all four rear wheels. On each side of the frame there are two semi-elliptical springs each resting at the middle point upon a rocker

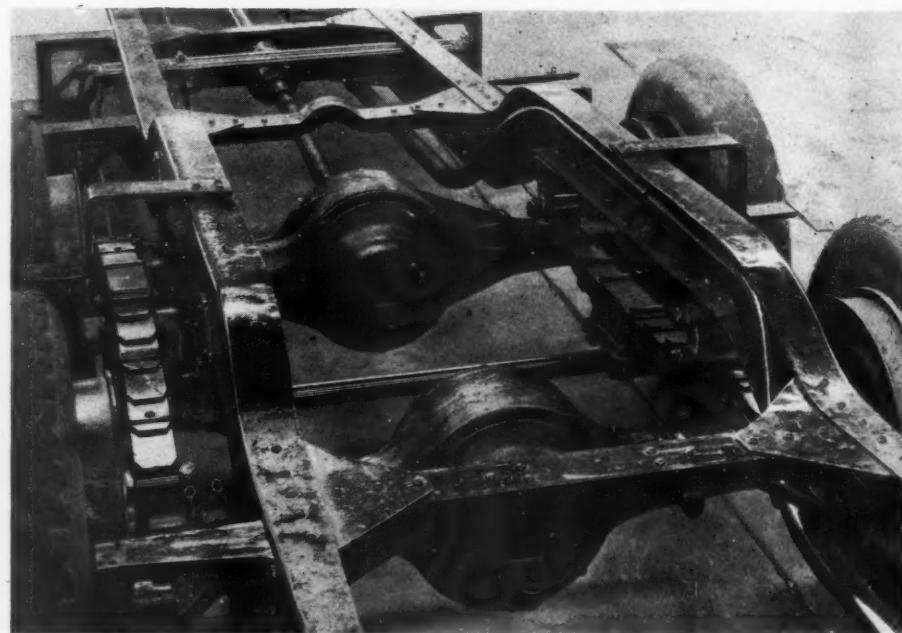
(Continued on page 58)



New Six Wheelers Built by California Transit Company for Operation Between Boise, Nampa and Caldwell

a regular run early in April, 1923. Up to July 20, the company has constructed and placed in operation sixteen of the six wheelers, and are taking the four wheelers out of commission. The six-wheeler stage was developed by A. T. Shere, superintendent of maintenance. Mr. Shere has also perfected a hollow cast aluminum wheel which has been adopted by the California Transit Company after extensive service tests, as standard for the company, and wheels of this type will be substituted for those now in service as rapidly as it is economical to do so.

Because of the extremes in temperature in the territory where the California Transit Company stages are operated (there being a temperature as high as 120 degrees in the interior valleys, and as low as 70 degrees around San Francisco Bay) wooden wheels have not proven satisfactory. This condition, combined with the lightness, strength and neatness of the cast aluminum wheels, was responsible for the adoption of the Shere cast aluminum wheel which is 20 inches in diameter and suitable for tires of sizes



Rear View Showing the Four Brake Drums and Special Rear Spring Construction

# Automatic Chassis Lubrication

Will Keep 'Em Out  
of the Shop and

## Reduce Operating Expenses

**S**ERVICE" has been the motor industry's reply to the plea of the motorist, and to the bus or truck operator as a cure for the small ills and aches contracted by their vehicles; while "lubricate" is the engineer's response to the plea for a preventative of those ills and aches. But with the widespread adoption of fleet motor transport, the industry can hardly be justified in busquely dismissing the patient, content that if the operator would lubricate more often, service repairs with their attending toll of time, money and good disposition would not be so frequently required.

"Keep 'em on the road" is the operators' slogan; "they don't earn anything in the service station or the repair shop." Now, a "little" trouble is quite as effective in taking 'em off the road as is a major repair. Often the chassis is out of service just as long or even longer, because the major repair is usually a unit replacement and done with comparative speed. When a chassis bearing has to be replaced, however, the chassis must be held in the shop until the job is done.

Must it not be conceded that where the task of lubricating requires but a small amount of effort and inspection, the average operator will not neglect it? In the matter of engine lubrication he is merely asked to replenish his oil supply periodically: the functioning of that oil has been planned and provided for, and will do its work satisfactorily without further attention. Replenishment being simple, and not requiring either mechanical knowledge or a strong liking for dirt, we rarely hear that engine bearings have been permitted to run dry.

Contrast this condition with that of the smaller but very important chassis bearings; particularly the spring and shackle bearings, where the pressures per square inch are often as high as those to which the crankshaft bearings of the engine are subjected. It is almost as rare to find a satisfactorily lubricated spring bolt as it is to find a dry crankshaft bearing. The question then confronts us: If the operator can and does properly lubricate his crankshaft bearings, why can't he also

Loading the Magazine Oiler is Only the Work of a Few Moments.



lubricate his chassis bearings satisfactorily?

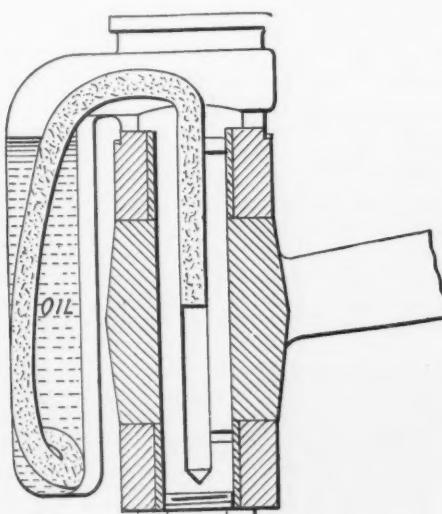
Many operators will answer "we do." But the vast majority who have been more hardened, or possibly more disillusioned, will say "what's the use?" They have found that even spending a very considerable amount of time greasing these parts does not eliminate replacement. Getting under and distributing (somewhat unequally) grease and dirt to the bearings and the man doing it, is a job that invites neglect and is hard to check up. Yet it must be done regularly as well as often, or times that it is done will not and cannot repair the damage and wear caused by neglect. A premature call for service in the nature

of repairs and replacement is the result. The fleet operator has to add considerably to his operating, maintenance and inspection expense, in order to get just a tolerable life for chassis bearings that should last as long as axles or transmission.

That manufacturers are by no means indifferent to this condition is amply attested by the various means and methods which have been tried to circumvent the evil. Many devices and designs, some quite costly, have had their trial with varying degrees of success. Some have even gone to the expedient of discarding spring design that has stood the test of time, in order to avoid the use of spring bolts.

It is also recognized that grease is not the right lubricant for these parts; because grease has a tendency to gather and hold dirt and grit. The folly of carrying these to a bearing is obvious. Another of its characteristics is that when placed between surfaces having only a slight movement, it will work away from the load side, unless it tends to give up its oil very readily. This makes it unsatisfactory from other standpoints.

Even when applied under high pressure, it does not necessarily mean that a film of lubricant is applied at the wearing point between the surfaces under load. True, grease is forced into the part under momentarily heavy pressure; but, it will follow the line of least resistance. The point of least resistance is usually the point farthest away from the load point. The pressure itself is only momentary, and while the clearance space may be filled with a very small amount of grease, the actual contact surface where friction occurs often receives none. It has, in all likelihood, had some of the old grit-laden grease forced against it by the inrushing stream of new lubricant. It would, there-



Illustrating the Operating Principles of the Magazine Oiling System

Oil flows to the bearing through a wick by capillary action. One end of the wick dips into the oil reservoir of the magazine oiler. The other end leads directly to or into the bearing.

fore, seem advantageous to remove the load from the bearing before attempting to "shoot" grease around a bearing, though this is seldom mentioned as being necessary.

Grease also absorbs moisture, which not only has a tendency to break it down, but has a fatal effect when it reaches the bearing. Due to its other failing (moving away from the friction surface, and the consequent clearance thus caused at that point) atmospheric moisture will enter and start corrosion when in contact with the bright metal parts. As a result, though a bearing may appear to be lubricated and grease is working out at the sides, the highly polished actual load surface may be quite dry and exposed to the action of moisture in the grease, or that carried in by damp air. The owner who says "what's the use?" is not altogether without reason for his attitude.

Throughout the automotive industry it is generally conceded that oil is the only effective and reliable lubricant, principally because, unlike grease, it has a tendency to work in and penetrate between moving surfaces. This insures not only a film of lubricant at the point it is most needed, but also effectively seals the part against moisture. To apply oil at frequent intervals through fittings similar to grease fittings, is a step in advance. It still requires far too much attention, which adds to "operating" costs; and the occasional neglect of one or more fittings results in wear that swells the "maintenance" account.

Many attempts have been made to utilize oil and supply it effectively and economically. The old-fashioned oil cups, however, hold too small a supply to last for any length of time; require more frequent refilling than they usually get; and are also easily knocked off by a wrench or in minor collisions.

Some attempts have also been made to pump or lead oil to the bearings from a central reservoir by means of pipes. Such systems, generally termed "central station systems," are difficult to install, costly to maintain and awkward to cope with in making repairs.

There is another oiling system, however, which has successfully withstood the severest tests over a period of seven years, and now promises to approximate the ultimate goal in chassis bearing lubrication, viz: to feed a small but steady flow of oil, constant in volume and quality, to a load side of a bearing whenever it is in motion; to do this without attention other than the replenishing of the oil supply every 3,000 miles or 90 days; and such replenishing to be accomplished as quickly

and as easily as a quart of oil is poured into the crankcase.

This is known as the Myers Magazine Oiling System. It was first used on the Fageol chassis in 1916, then on all the Class "B" military trucks built during the war, where its gratifying success has

lifts exactly the right amount of kerosene from a lamp reservoir to the flame, only the lubricating wicks do not touch the bearing surface and wear out.

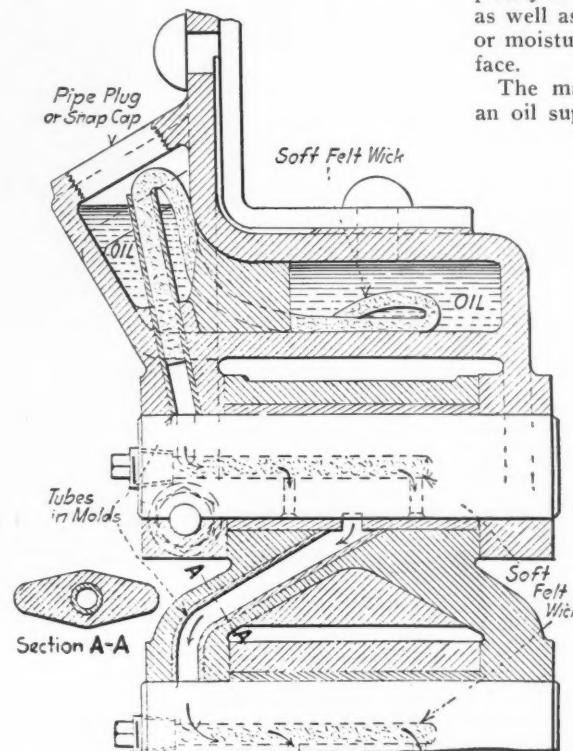
As a result of this method all the oil reaching the bearing is clean and free of foreign matter, for the wick which completely fills the feed holes acts as a filter as well as a conveyor, so that dirt, water or moisture cannot reach the bearing surface.

The magazines, as stated before, hold an oil supply sufficient for 3,000 to 6,000 miles. In some cases replenishment has not been necessary for six months, but even at the over-conservative estimate of 30 days, the operator will have no more excuse for permitting his chassis bearings to run dry than he has for not putting oil into his crankcase, since both are equally easy to fill. It is merely necessary to remove a sizable cap, pour in some oil and replace the cap on the magazine. He may then proceed to forget about that bearing for another month or so. All the magazines on the chassis can be filled in ten minutes, using (in the summer) the same oil put into the engine, while in winter the oil drained from the crankcase makes a very satisfactory lubricant.

Convenience, however, is not the chief factor to be sought. Effective performance is, and this system renders it in a manner heretofore thought impossible. If we assume that a magazine holds sufficient lubricant for 3,000 miles, this method naturally assures just as much and just as effective lubrication during the 3,000th mile of travel as it does during the first mile. This is a point worth noting. The automatic feed puts out just enough oil and no more, at all times. The seepage goes out at the spring eyes and finds its way between the spring leaves, a very important feature, tending to solve, as it does, the question of spring lubrication. Spring breakage is almost unknown where these magazines are used, and easier riding is very noticeable.

The Myers Magazine Oiling System is the result of a long period of experiment and evolution. Its use on over 30,000 chassis has proved its merits in actual service on a large scale, and a number of manufacturers of trucks and motor buses have adopted it as standard equipment. It puts chassis bearings in the same class as the transmission and rear axle for long life and ease of upkeep.

The Chassis Lubricating Co., Rahway, N. J., recently designed equipment which may be attached to vehicles now in service without the necessity of any structural changes. Arrangements to distribute them have been made with the C. G. Spring & Bumper Co., New York City.



#### How One Magazine Can Lubricate Both Shackle Bolts at the Rear End of the Front Spring

This type is used on a Ward LaFrance 7-ton truck. Note that the wick lifts the oil to the top of the feed tube, and that neither dirt nor water can climb up or get down to the bearing surface. The construction is inexpensive and unbreakable.

caused its further development for general commercial use.

In this system an oil magazine or cavity is incorporated in proximity to the bearing to be lubricated (in some cases two bearings, if close together, may be fed by a single magazine). The oil level in the magazine is always below the feed point to the bearing surface, and in all cases the oil is caused to flow to the bearing through a wick by capillary action, there being no gravity feed. One end of a felt wick dips into the oil reservoir of the magazine, while the other end leads directly to or into the bearing. When oil escapes from the bearing the wick automatically replenishes the slight loss and feeds fresh clean oil to the load surface. It does this just as reliably as a lamp wick



#### Spring Bolt Wear Negligible

Close-up showing a spring-bolt, removed after over 150,000 miles of service. The micrometer shows an average wear of only .003 inch. At this rate the bolt was good for over 500,000 miles of service. The lubricant was oil drained from the engine crankcase.

## KEY OF ABBREVIATIONS

## Wheelbase:

—More than one wheelbase furnished.

## Tires:

—Unless marked otherwise all tires are  
solids.  
\*—Pneumatics standard equipment.  
†—Pneumatics at Extra Cost.  
‡—Dual on Rear.

## Engine:

Bud—Buda Co., Harvey, Ill.  
Con—Continental M. Corp., Detroit, Mich.  
D—Head & Side  
GBS—Golden, Belknap & Swartz Co., Detroit, Mich.  
H—Overhead.  
Her—Hercules M. Mfg. Co., Canton, Ohio.  
Hin—Hinkley Motors, Inc., Detroit, Mich.  
H-S—Herschell-Spillman Motor Co., North Tonawanda, N. Y.  
H-C—Holl Scott Motor Co., Berkeley, Cal.  
L—L-Head.  
Lyc—Lycoming M. Corp., Williamsport, Pa.  
Mid—Midwest Eng. Co., Indianapolis, Ind.  
FP—Full Pressure to all bearings including wrist pins.  
PC—Pressure to all crankshaft and connecting rod bearings.  
PS—Pressure with splash.  
SP—Circulating splash.  
T—T-Head.  
Wau—Waukesha M. Co., Waukesha, Wis.  
Wis—Wisconsin M. Mfg. Co., Milwaukee, Wis.  
Yell—Yellow Sleeve Valve Eng. Works, East Moline, Ill.  
X—Sleeve.

## Governor:

Con—Continental M. Corp., Detroit, Mich.  
Dup—Duplex Eng. Gov. Co., Brooklyn, N. Y.  
Han—Handy Gov. Co., Detroit, Mich.  
Hin—Hinkley Motors, Inc., Detroit, Mich.  
McK—E. R. Klemm, Chicago, Ill.  
Mon—Monarch Gov. Co., Detroit, Mich.  
Non—Not Supplied.  
Pha—Pharo Mfg. Co., Detroit, Mich.  
Pie—Pierce Governor Co., Anderson, Ind.  
Sim—Duplex Eng. Gov. Co., Brooklyn, N. Y.  
Wau—Waukesha M. Co., Waukesha, Wis.

## Radiator:

Bre—Bremer-Tully Mfg. Co., Chicago, Ill.  
Bus—Bush Mfg. Co., Hartford, Conn.  
Cor—Corcoran Mfg. Co., Cincinnati, Ohio.  
Chic—Chicago Mfg. Co., Chicago, Ill.  
E&M—English & Mersick Co., New Haven, Conn.  
Fed—Fedders Mfg. Co., Buffalo, N. Y.  
Fle—Flexo Mfg. Co., Los Angeles, Cal.  
G&O—G. & O. Mfg. Co., New Haven, Conn.  
Har—Harrison Rad. Corp., Lockport, N. Y.  
Idl—Ideal Sheet Metal Works, Chicago, Ill.  
Lon—Long Mfg. Co., Detroit, Mich.  
McC—McCord Rad. & Mfg. Co., Detroit, Mich.  
McK—McKinnon Dash Co., Buffalo, N. Y.  
Per—Racine Radiator Co., Racine, Wis.  
R-T—Rome-Turney Rad. Co., Rome, N. Y.  
S-J—Shotwell-Johnson Co., Minneapolis, Minn.  
Spl—Splitdorf Electrical Co., Newark, N. J.  
Stn—Standard Radiator Co., Inc., Springfield, N. Y.  
US—U. S. Cartridge Co., Lowell, Mass.  
Whe—Wheeler Rad. & Mfg. Co., E. Cleveland, Ohio.

## Fuel System:

Car—Carter Carburetor Co., St. Louis, Mo.  
Ens—Ensign Car. Co., Los Angeles, Cal.  
G—Gravity.  
Hol—Holley Carburetor Co., St. Louis, Mo.  
Joh—Johnson Co., Detroit, Mich.  
Mar—Marvel Carburetor Co., Flint, Mich.  
P—Pressure.  
Ray—Beneke & Kropf Mfg. Co., Chicago, Ill.  
Sco—Briscoe Devices Corp., Pontiac, Mich.  
She—Wheeler Schebler Carburetor Co., Indianapolis, Ind.  
Ste—Detroit Lubricator Co., Detroit, Mich.  
Str—Stromberg Motor Devices Co., Chicago, Ill.  
Til—Tillotson Mfg. Co., Toledo, Ohio.  
V—Vacuum.  
Zen—Zenith-Detroit Corp., Detroit, Mich.

## Electrical System:

‡—Generator & Starter at Extra Cost.  
†—Starter not Supplied, Generator at Extra Cost.  
A-C—Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Apo—Apollo Magneto Corp., Apollo, Pa.  
A-K—Atwater Kent Mfg. Co., Phila., Pa.  
A-L—Electric Auto-Lite Corp., Toledo, O.

Ber—Ericsson Mfg. Co., Buffalo, N. Y.  
Bij—Bijur Motor Appliance Co., Hoboken, N. J.

Bos—American Bosch Magneto Co., Springfield, Mass.

Con—Connecticut Telephone & Electric Co., Meriden, Conn.

Del—Dayton Engin. Lab. Co., Dayton, Ohio.

Dyn—Owen Dyneto Corp., Syracuse, N. Y.

Eis—Eisemann Magneto Corp., Brooklyn.

G&D—Gray & Davis, Boston, Mass.

Kin—Kokomo Electric Co., Kokomo, Ind.

K-W—K W Ignition Co., Cleveland, Ohio.

L-N—Leece-Neville Co., Cleveland, O.

N-E—North East Elec. Co., Rochester, N. Y.

Non—Not Supplied.

POL—Prest-O-Lite Co., Inc., Indianapolis, Ind.

Rem—Remy Electric Co., Anderson, Ind.

RBo—Robert Bosch Magneto Co., New York, N. Y.

Sim—Simms Magneto Co., E. Orange, N. J.

Spl—Splitdorf Electrical Co., Newark, N. J.

Wag—Wagner Elec. Mfg. Co., St. Louis, Mo.

Wes—Westinghouse Elec. & Mfg. Co., Springfield, Mass.

USL—U. S. Light & Heat Corp., Niagara Falls, N. Y.

## Clutch &amp; Gearset:

\*—Other ratios optional.

A—Amidships.

B & B—Borg & Beck Co., Chicago, Ill.

B-L—Brown-Lipe Gear Co., Syracuse, N. Y.

Cot—Cotta Transmission Corp., Rockford Ill.

Cov—Covert Gear Co., Lockport, N. Y.

Det—A. J. Detlaff Co., Detroit, Mich.

D-G—Detroit Gear & Machine Co., Detroit, Mich.

Dod—Dodge Brothers Co., Detroit, Mich.

D—Disk.

Dun—Dundore Mfg. Co., Reading, Pa.

Durs—Durston Gear Corp., Syracuse, N. Y.

Ful—Fuller & Sons Mfg. Co., Kalamazoo, Mich.

G-L—Grant Lee Gear Corp., Cleveland, O.

Har—Hartford Auto Parts Corp., Hartford, Conn.

Hoo—Hoosier Clutch Co., Muncie, Ind.

H-S—Hele-Shaw, Merchant & Evans Co., Philadelphia, Pa.

J—Unit with Jackshaft.

K—Cone.

M-E—Merchant & Evans Co., Phila., Pa.

M-M—Mechanics Mach. Co., Rockford, Ill.

Mun—Muncie Gear Works, Muncie, Ind.

O—Disk in Oil.

P—Plate.

R—Rear Axle.

U—Unit with Engine.

W-G—Warner Gear Co., Muncie, Ind.

## Universal:

Blo—Blood-Bros. Mach. Co., Allegan, Mich.

Det—Universal Products Co., Detroit, Mich.

Har—Hartford Auto Parts Corp., Hartford, Conn.

M-M—Mechanics Machine Co., Rockford, Ill.

M-E—Merchant & Evans Co., Phila., Pa.

Pet—Cleveland Universal Parts Co., Cleveland, Ohio.

Pic—Carl Pick Co., West Bend, Wis.

Sne—Snead & Co., Jersey City, N. J.

Spi—Spicer Mfg. Corp., S. Plainfield, N. J.

The—Thermoid Rubber Co., Trenton, N. J.

U-M—Universal Machine Co., Bowling Green, Ohio.

U-P—Universal Products Co., Detroit, Mich.

## Front and Rear Axles:

1/4—Semi-Floating.

3/4—Three-Quarter Floating.

Atl—Atlas Axle Co., Wilmington, Del.

Cla—Clark Equip. Co., Buchanan, Mich.

Col—Columbus Axle Co., Cleveland, O.

Con—Continental Axle Co., Edgerton, Wis.

C—Chain.

R—Straight Bevel.

D—Dead.

Eat—Eaton Axle Co., Cleveland, Ohio.

Fl—Flint Motor Axle Co., Flint, Mich.

F—Floating.

Huc—Huck Axle Co., Chicago, Ill.

I—Internal Gear.

LM—L. M. Axle Co., Cleveland, Ohio.

P—Spur Gear.

R—Double Reduction.

Rus—Russel Motor Axle Co., Detroit, Mich.

S—Spiral Bevel.

Sal—Salisbury Axle Co., Jamestown, N. Y.

She—Sheldon Axle & Spring Co., Wilkes-Barre, Pa.

Shu—Shuler Axle Co., Inc., Louisville, Ky.

Std—Standard Parts Co., Cleveland, O.

Tim—Timken Detroit Axle Co., Detroit, Mich.

Tor—Eaton Axle & Spring Co., Cleveland, Ohio.

Vul—Vulcan Motor Axle Co.

Wal—Walker Axle Co., Chicago, Ill.

W—Worm.

Wis—Wisconsin Parts Co., Oshkosh, Wis.

## Brake:

A—Rear Wheels only.

B—Drive Shaft and Rear Wheels.

C—Front and Rear Wheel.

D—Jackshaft and Rear Wheels.

## Springs:

Am—American Auto Parts Co., Detroit, Mich.

Arm—General Motors Co., Pontiac, Mich.

Bea—Beams Spring Co., Inc., Massillon, O.

Bet—Betts Bros. Sp. Co., Inc., San Francisco, Cal.

Cha—Champion Auto Sp. Co., St. Louis, Mo.

Del—D. Delany & Son, Newark, N. J.

Det—Detroit Steel Prod. Co., Detroit, Mich.

G-C—Garden City Sp. Works, Chicago, Ill.

Har—Harvey Sp. & Forging Co., Racine, Wis.

I-C—Iron City Spring Co., Pittsburgh, Pa.

Lig—Liggett Sp. & Axle Co., Monongahela, Pa.

Mar—Maremont Mfg. Co., Chicago, Ill.

Mat—Mather Spring Co., Toledo, O.

Mer—E. R. Merrill Spring Co., New York.

Pen—Penn Sp. Works, Baldwinsville, N. Y.

Per—Perfection Sp. Co., Cleveland, O.

Phi—Phila. Sp. Works, Phila., Pa.

P.S.—Point Sp. Co., Pittsburgh, Pa.

S. S.—Standard Steel Sp. Co., Coraopolis, Pa.

Ste—Sterling Spring Co., Pittsburgh, Pa.

Tem—Temme Sp. Corp., Chicago, Ill.

Tut—Tuthill Sp. Co., Chicago, Ill.

U. S.—United States Sp. Co., Los Angeles, Cal.

Vul—Jenkins Vulc. Sp. Co., Richmond, Ind.

## Steering Gear:

CAS—C. A. S. Products Co., Columbus, O.

Dit—Ditwiler Mfg. Co., Galion, Ohio.

Dod—Dodge Bros. Co., Detroit, Mich.

Gem—Gemmer Mfg. Co., Detroit, Mich.

Jac—Saginaw Products Co., Saginaw, Mich.

Lav—Lavine Gear Co., Milwaukee, Wis.

M-P—Muncie Gear Works Corp., Muncie, Ind.

Ros—Ross Gear & Tool Co., Lafayette, Ind.

Sag—Saginaw Products Co., Saginaw, Mich.

Woh—Wohlrab Gear Co., Racine, Wis.

## Wheels:

Arc—Archibald Wheel Co., Lawrence, Mass.

A-W—Auto Wheel Co., Lansing, Mich.

Bim—Bimel Spoke & Auto Wheel Co., Portland, Ind.

Bud—Budd Wheel Co., Phila., Pa.

Cla—Clark Equip. Co., Buchanan, Mich.

Day—Dayton Steel Foundry Co., Dayton, Ohio.

Det—Detroit Panel & Plywood Co., Detroit, Mich.

Dis—Disteel Wheel Corp., Detroit, Mich.

Hay—Hayes Wheel Co., Jackson, Mich.

Hoo—Hoopes, Bro. & Darlington, Inc., West Chester, Pa.

Ind—Indestructible Wheel Co., Lebanon, Ind.

Int—Interstate Foundry Co., Chicago, Ill.

Jon—Jones, Phineas & Co., Newark, N. J.

Kel—Kelsey Wheel Co., Detroit, Mich.

MM—Michigan Malleable Iron Co., Detroit.

Mot—Motor Wheel Corp., Lansing, Mich.

Mun—Muncie Wheel Co., Muncie, Ind.

Nor—Northern Wheel Corp., Alma, Mich.

Pru—Prudden Wheel Co., Lansing, Mich.

Roy—Royer Wheel Co., Aurora, Ind.

Sch—Schwarz Wheel Co., Phila., Pa.

Smi—Smith Wheel, Inc., Syracuse, N. Y.

StM—St. Marys Wheel Co., St. Marys, O.

Std—Standard Wheel Co., Terre Haute, Ind.

Van—Van Wheel Corp., Oneida, N. Y.

Wal—Walker Axle Co., Chicago, Ill.

Way—Wayne Wheel Co., Newark, N. Y.

Whit—Whitcomb Wheel Co., Kenosha, Wis.

## Rim Equipment:

Fir—Firestone Steel Products Co., Akron, Ohio.

Gdy—Goodyear Tire & Rubber Co., Akron, Ohio.

Hay—Hayes Wheel Co., Jackson, Mich.

Jax—Jaxon Steel Prod. Co., Jackson, Mich.

Kel—Kelsey Wheel Co., Detroit, Mich.

Mill—Miller Rubber Co., Akron, Ohio.

Non—None Supplied.

# Commercial Car Specifications—Corrected Monthly

The Specifications, Chassis Prices, Etc., Are Corrected Each Month From Data Supplied Direct by the Makers. Gasoline Commercial Cars Will be Found at the End of Gasoline Commercial Cars

Those Chassis Which Are Sold and Recommended for Passenger Transportation Are Designated in the Following Table by Reference Sign (S) in Front of the Name

For Specially Designed Motor Bus Chassis See Pages 44 and 45

See Table for Replacement Data. Truck Frame Dimensions Are Included in Same Table  
(Where prices are not given it is because we have been unable to get them from authoritative sources)

For full name and address of manufacturer and information regarding complete line see page 43

Trade Name and Model	General		Engine	Clutch	Gearset	Rear Axle	Gear Ratios	Front Axle Make and Model	Brakes, Location in	Low Gear Reduction in	High Gear Reduction in	Type	Final Drive	Springs (Make)	Wheels (Make)	Tires (Make)	Chassis Weight (lbs.)	
	Chassis Price	Standard Wheelbase (inches)																
<b>1000 Pounds</b>																		
Chevrolet Sup. Com. Ch.	410	103	30x3 1/2*	30x3 1/2*	Own 91	21.7 H	PS Non	Har	Zen	G Rem	Rem	Own Sup	S	1/2	3.77	12.5	A	1430
Overland 91	395	100	30x3 1/2*	30x3 1/2*	Own 91	19.6 L	PC Non	Non	Til	G A-L	Own	Own 91	S.S.	1/2	4.50	17.6	A	1550
Yellow Cab Mod T3	1495	109	29x4 1/2*	29x4 1/2*	Con V-7	22.5 L	PS Non	Non	Zen	G N-E	Own	Own Tim 5330	Own	1/2	4.90	16.3	B	2500
Diamond T75	1800	130	34x4 1/2*	34x4 1/2*	H-S 30	19.8 L	PS Non	McC	Shr	V Eis	A-L	Own 91	S.S.	1/2	6.00	20.0	A	1430
Dodge Brothers	730	116	32x4*	32x4*	Own H-OX	25.6 L	PC Non	Non	Non	V Apo	Cov	Own 91	Own	1/2	5.12	18.5	A	1550
Rainer, R-31	1970	125	35x5*	35x5*	Con N	24.0 L	SP Non	McC	Ste	V Eis	Non	Own 91	Own	1/2	4.74	18.9	A	1430
Russets 15	122	122	32x4 1/2*	32x4 1/2*	H-S 30	22.5 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.74	22.5	A	1550
White 16	2400	133 1/2	34x5*	34x5*	Own GK	19.6 L	PS Non	Per	Zen	V Eis	Non	Own 91	Own	1/2	5.81	19.7	A	1430
Autoear F	2200	97	34x4 1/2	34x4 1/2	Own 2	18.1 L	SP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.36	18.6	A	1550
Autoear G	2300	120	34x4 1/2	34x4 1/2	Own 2	18.1 L	SP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	18.6	A	1550
Bessemer G	124	124	36x5*	35x5*	Con N	19.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	18.6	A	1550
Bethlehem KN	1895	125	35x5*	35x5*	Own KN	19.6 L	FP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	18.6	A	1550
Bets J-3	1850	140	34x5*	34x5*	Con J-3	22.3 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	18.6	A	1550
Brookway E-3	135	135	33x5*	33x5*	Wis SU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	18.6	A	1550
<b>1 Ton</b>																		
Autoear F	2200	97	34x4 1/2	34x4 1/2	Own 2	18.1 L	SP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	33.2	A	3800
Autoear G	2300	120	34x4 1/2	34x4 1/2	Own 2	18.1 L	SP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.30	33.2	A	3800
Corbitt E	136	136	36x6*	36x6*	Con G	25.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	6.86	21.8	A	3800
Diehl A	1600	130	34x4 1/2*	34x4 1/2*	Con N	22.3 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	7.80	24.8	A	3800
Doris K-2	115	115	34x5*	34x5*	Own K-2	19.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	7.80	25.9	A	3800
Duplex G	132	132	33x5*	33x5*	Own K-2	25.6 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	7.80	25.9	A	3800
Federal R-2	132	132	32x5*	32x5*	Own K-2	25.6 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	7.80	25.9	A	3800
Ford T	122	122	30x5 1/2*	30x5 1/2*	Own K-2	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.60	22.0	A	1250
Fulton A	1495	130	35x5*	35x5*	Own K-2	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.60	22.0	A	1250
Garfield 15	1700	130	34x5*	34x5*	Bud WTU	23.4 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.43	18.1	A	1850
GM K-16	495	120	34x5*	34x5*	Own Sup	18.1 L	SP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.86	23.4	A	2930
Concord 11	127	127	34x5*	34x5*	Own Sup	18.1 L	SP Non	Non	Non	V Eis	Non	Own 91	Own	1/2	6.20	24.8	A	2930
Corbitt E	1600	130	36x6*	36x6*	Bud GBU	25.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	7.80	25.9	A	3800
Diehl A	115	115	34x5*	34x5*	Con N	22.3 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	7.80	25.9	A	3800
Doris K-2	2490	Opt	33x5*	33x5*	Own K-2	19.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	4.23	15.6	A	1250
Duplex G	132	132	32x5*	32x5*	Bud WTU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.60	22.0	A	1250
Federal R-2	132	132	32x5*	32x5*	Bud WTU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.60	22.0	A	1250
Ford T	122	122	30x5 1/2*	30x5 1/2*	Bud WTU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.60	22.0	A	1250
Fulton A	1495	130	35x5*	35x5*	Bud WTU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.60	22.0	A	1250
Garfield 15	1700	130	34x5*	34x5*	Bud MU	21.0 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	6.50	24.7	A	1452
GM K-16	132	132	36x5*	36x5*	Bud MU	21.0 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	6.50	24.7	A	1452
Graf-Freight 20 B	1775	131	33x5*	33x5*	Bud MU	21.0 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	6.00	21.0	A	1452
Graham Bros. BA	1265	140	33x5*	33x5*	Bud MU	21.0 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.50	22.9	A	1452
Grass-Brem. 10-Sp.	1360	126	32x5*	32x5*	Lyce CT	24.9 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.75	23.0	A	1452
Independent (Iowa) J	1450	135	34x5*	34x5*	Lyce CT	22.6 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.75	23.0	A	1452
Indiana 11. "S"	129	129	34x5*	34x5*	Her OX	24.1 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.75	23.0	A	1452
Interest 11. "S"	124	124	32x5*	32x5*	Lyce Spec	19.6 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.66	22.6	A	1452
Kearne H.	1150	118	32x5*	32x5*	PS Non	19.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.66	18.3	A	1452
Kenworth OS	2150	131	32x5*	32x5*	Bud WTU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.38	22.0	A	1452
Kenworth OL	2250	140	30x5*	30x5*	Bud WTU	22.5 L	PC Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.37	22.0	A	1452
King-Zeitzer	2050	134	34x5*	34x5*	Con J-4	24.9 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.75	23.0	A	1452
Kissel	1885	140	34x5*	34x5*	Con J-4	24.9 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	6.2	22.8	A	1452
Luedinghaus	130	130	34x5*	34x5*	Her OBX	25.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.37	22.0	A	1452
Menominee	1650	132	34x5*	34x5*	Her OBX	25.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.37	22.0	A	1452
Moreland R-R.	1875	130	34x5*	34x5*	Her OBX	25.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.37	22.0	A	1452
Moreland RC.	1220	180	32x5*	32x5*	Her OBX	25.6 L	PS Non	Non	Non	V Eis	Non	Own 91	Own	1/2	5.37	22.0	A	1452



For full name and address of manufacturer and information regarding complete line see page 43

Trade Name and Model	General	Engine		Clutch	Gearset	Rear Axle	Gear Ratios	Front Axle Make and Model		Springs (Make)	Wheels (Make)	Rims (Make)	Chassis Weight (lbs.) (stripped)	
		Tire Size	Bore and Stroke					Make and Model	Final Drive					
<b>1½ Ton—Con'd</b>														
Indiana 11A . . . . .	114°	30x5 1/2	34x7	Her OX	P C	Non	Non	She W-1501	W	6.50	31.2	A	Sal-D Bea	
Indiana 15 . . . . .	145°	38x3 1/2	38x6	Her OX	P C	Non	Non	She 33FA	W	7.80	31.2	A	Own 33	
International 33 . . . . .	128	38x4	38x6	Own 33	P C	Non	Non	Own 33	W	8.00	32.5	A	4070	
Kearns N. . . . .	1650	136	34x6	H-8700	P C	Non	Non	Own 33	W	7.60	30.0	A	3000	
Kelly-Springfield K33 . . . . .	2750	140°	34x4	Own 33	P C	Non	Non	Own 33	W	7.75	31.5	A	5450	
King Zeitzer . . . . .	1975	152	36x4 1/2	36x6 1/2	P C	Non	Non	Own 33	W	7.75	37.2	A	4300	
Kissel . . . . .	2800	147	36x4 1/2	36x7	P C	Non	Non	Own 33	W	7.80	28.5	A	4100	
Kleiber . . . . .	2650	145	34x4	34x6	P C	Non	Non	Own 33	W	7.75	41.5	A	4300	
Lange 1 1/2 . . . . .	2850	145	34x4	34x6	P C	Non	Non	Own 33	W	8.75	46.8	A	4600	
Larrieu XJ . . . . .	2850	145	34x4	34x6	P C	Non	Non	Own 33	W	8.70	37.3	A	4200	
Luedinghaus . . . . .	2850	145	34x4	34x6	P C	Non	Non	Own 33	W	8.70	37.3	A	4500	
Mack AB . . . . .	3000	Opt	36x4 *	36x3 1/2	Own AB	Own AB	Own AB	She W-1501	W	6.90	37.8	B	Own AB	
Mack AB . . . . .	3450	Opt	36x4 *	36x5 *	Own AB	Own AB	Own AB	She 33FA	W	7.60	19.3	A	FI Spec	
Mason Road King . . . . .	1495	130	34x5 *	34x5 *	Her O	P C	Non	Own AB	W	8.25	30.3	A	4300	
Master 21 . . . . .	142	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	7.00	28.0	A	4220	
Metromobile H . . . . .	2475	144	36x3 1/2	36x5 1/2	Own AB	P C	Non	Own AB	W	7.00	28.0	A	4125	
Moreland BX . . . . .	2275	132	38x3 1/2	38x5 1/2	Own AB	P C	Non	Own AB	W	7.00	28.0	A	3400	
Nelson-LeMoon G-2 . . . . .	2200	144	36x4 *	36x6 *	Own AB	P C	Non	Own AB	W	7.00	28.0	A	3800	
Noble A-21 . . . . .	1750	133	34x4	34x6	Own AB	P C	Non	Own AB	W	7.75	25.8	A	4100	
O. K. . . . .	1750	136	34x4	34x6	Own AB	P C	Non	Own AB	W	7.75	25.8	A	3400	
Ogden D2 . . . . .	2150	140°	34x3 1/2	34x5 1/2	Own AB	P C	Non	Own AB	W	7.25	29.8	A	3700	
Parker E-24 . . . . .	2150	140°	34x3 1/2	34x5 1/2	Own AB	P C	Non	Own AB	W	7.50	25.8	A	3250	
Powers . . . . .	2580	147	34x4	34x6	Own AB	P C	Non	Own AB	W	7.75	25.8	A	2900	
Rainier R36 . . . . .	2580	147	34x4	34x6	Own AB	P C	Non	Own AB	W	7.75	25.8	A	3400	
Republi. 10F . . . . .	140	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	7.75	25.8	A	3000	
Ruggles 21 . . . . .	2150	144	36x3 1/2	36x5 1/2	Own AB	P C	Non	Own AB	W	7.75	25.8	A	3595	
Rumley A. . . . .	1895	138	34x4	34x6	Bud CTU	P C	Non	Non	Own AB	W	6.90	26.6	A	5170
Sandow W-15 . . . . .	140	36x6	36x6	Bud WTR	P C	Non	Non	Own AB	W	7.00	33.6	A	4500	
Sanford W-15 . . . . .	140	36x6	36x6	Bud WTR	P C	Non	Non	Own AB	W	7.20	33.0	A	4695	
Schaeft H. . . . .	2560	144	36x3 1/2	36x5 1/2	Own AB	P C	Non	Non	Own AB	W	6.75	23.0	A	3650
Service 35 C. . . . .	146	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	7.75	31.3	A	4760	
Signal H. . . . .	144	34x3 1/2	34x5 1/2	Own AB	P C	Non	Non	Own AB	W	6.50	24.5	A	3466	
Standard 1 1/2 K. . . . .	144	34x3 1/2	34x5 1/2	Own AB	P C	Non	Non	Own AB	W	6.50	24.5	A	4780	
Stirling 1 1/2 K. . . . .	142	34x3 1/2	34x5 1/2	Own AB	P C	Non	Non	Own AB	W	6.28	25.1	B	3200	
Stewart 17 . . . . .	1595	145	34x5 *	34x5 *	Own AB	P C	Non	Non	Own AB	W	7.00	30.3	A	7003
Traffic . . . . .	1750	128	34x5 *	34x6 1/2	Own AB	P C	Non	Non	Own AB	W	6.15	22.5	A	3400
Transport 26 . . . . .	140	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	7.25	29.0	A	3800	
Traylor B. . . . .	2390	140	34x3 1/2	34x5 1/2	Bud WTR	P C	Non	Non	Own AB	W	7.80	29.0	A	4300
Triangle A. . . . .	1985	144	34x3 1/2	34x5 1/2	Own AB	P C	Non	Non	Own AB	W	7.75	29.0	A	3750
Union E. . . . .	1800	137	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	5.25	32.5	A	4420
United 32 . . . . .	148	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	5.80	23.7	A	2940	
United 32 . . . . .	148	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	6.00	24.5	A	3740	
U. S. N. . . . .	144	34x3 1/2	34x5 1/2	Own AB	P C	Non	Non	Own AB	W	7.60	30.4	A	3740	
Wachusett J. . . . .	2800	148	36x6	36x6	Bud WTR	P C	Non	Non	Own AB	W	7.20	28.5	A	3452
Walker-Johnson L. . . . .	2590	137	34x4	34x6	Own AB	P C	Non	Non	Own AB	W	7.75	24.8	A	3750
Wilex BB . . . . .	2550	135	36x4	36x5 1/2	Own AB	P C	Non	Non	Own AB	W	7.75	24.8	A	3750
Wisconsin B. . . . .	1890	136	33x5	33x6	Own AB	P C	Non	Non	Own AB	W	6.25	29.9	A	3750
Witt-Will B. . . . .	2450	144	36x3 1/2	36x6	Own AB	P C	Non	Non	Own AB	W	6.25	36.1	A	3750
<b>2 Ton</b>														
Acme 40 . . . . .	141	34x3 1/2	34x5 1/2	Con N-4	P C	Non	Non	Own AB	W	8.75	35.0	A	3980	
Acme 40-L . . . . .	147	34x3 1/2	34x5 1/2	Con K-4	P C	Non	Non	Own AB	W	8.75	35.0	A	4100	
Autoear F. . . . .	2290	97	34x4	34x6	Own 2	P C	Non	Non	Own AB	W	8.30	33.2	A	3800
Autoear G. . . . .	2390	120	34x4	34x6	Own 2	P C	Non	Non	Own AB	W	8.30	33.2	A	3900
Autoear H. . . . .	3450	114	34x4	34x6	Own H	P C	Non	Non	Own AB	W	7.72	46.3	A	4875
Autoear K. . . . .	3550	138	34x5 *	34x5 *	Own H	P C	Non	Non	Own AB	W	7.75	31.0	A	4150
Available JH-2 . . . . .	2495	137 1/2	34x5 *	34x5 *	Her O	P C	Non	Non	Own AB	W	7.75	31.0	A	4250
Bethlehem GN . . . . .	2800	140	34x3 1/2	34x5 1/2	Own GN	P C	Non	Non	Own AB	W	7.75	41.5	A	3750
Buffalo 9&10 . . . . .	2840	163	34x4	34x6	Bud GTR	P C	Non	Non	Own AB	W	7.75	49.4	A	3750
Clinton 45 . . . . .	140	34x4	34x6	Own BD	P C	Non	Non	Own AB	W	6.75	36.1	A	3750	
Concord G. . . . .	150	36x4	36x6	Own BD	P C	Non	Non	Own AB	W	6.75	36.1	A	3750	
Concord H. . . . .	150	36x4	36x6	Own BD	P C	Non	Non	Own AB	W	6.75	36.1	A	3750	
Corbit C. . . . .	2750	148	36x4	36x6	Own C-4	P C	Non	Non	Own AB	W	10.6	35.6	A	3750
Day-Elder BN . . . . .	144	34x3 1/2	34x5 1/2	Con K-4	P C	Non	Non	Own AB	W	7.25	28.6	A	4100	
Day-Elder E. . . . .	140	34x3 1/2	34x5 1/2	Con K-4	P C	Non	Non	Own AB	W	9.25	44.4	A	3965	
Defiance E. . . . .	140	34x3 1/2	34x5 1/2	Con K-4	P C	Non	Non	Own AB	W	9.25	44.4	A	3965	
Defiance E. . . . .	157	34x3 1/2	34x5 1/2	Con K-4	P C	Non	Non	Own AB	W	9.25	44.4	A	3965	

2½ Ton  
Acorn 50. Fr.  
Amer.-La Fra

For full name and address of manufacturer and information regarding complete line see page 43

Trade Name and Model	General		Engine		Clutch		Gearset		Rear Axle		Front Axle Make and Model		Brakes, Location in		Gear Ratios		Springs (Make)		Steering Gear (Make)		Wheels (Make)		Firms (Make)		Chassis Weight (lbs.)	
	Front (inches)	Tire Size \$	Make and Model	Front (inches)	Stroke (inches)	Fuel System	Generator and Starter (Make)	Type	Location	No. of Forward Speeds	Universal (Make)	Make and Model	Final Drive	Type	Final Reduction in	Overall Reduction in	Low	High	Final Drive	Springs (Make)	Wheels (Make)	Firms (Make)	Chassis Weight (lbs.)	Chassis Weight (lbs.)		
<b>2½ Ton—Con'd</b>																										
Day-Elder DN	144	36x4 <sup>1</sup> ‡	Con K-4	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Mon	Bos <sup>†</sup>	B-L 35	Tim 6566	W F	8.50	45.1	A	Col 7018	She	Gem	Van	Mat	Col 7018	She	Gem	Van	5100			
Diamond T U2	160	36x4 <sup>1</sup>	Con K-4	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	25.6 L	FP Own	Bos	B-L 35	Tim 6560	W F	7.90	36.8	A	Tim 1544B	Mat	Gem	Non	Mat	Tim 1544B	Mat	Gem	Non	5250			
Dixon C	154	36x4 <sup>1</sup>	Con K-4	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Pfe	Bos	B-L 35	Tim 6560	W F	8.50	45.4	A	Tim 1520	S.P. Ros	S.P. Ros	Non	Mat	Tim 1520	S.P. Ros	S.P. Ros	Non	5800			
Duplex A.C.	160	36x4 <sup>1</sup>	Con K-4	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	25.6 L	PC Opt	Bos	B-L 35	Tim 6560	W F	8.50	45.4	A	Vul 4	Pen	St.M. Mot	Non	Mat	Vul 4	Pen	St.M. Mot	Non	5500			
Federal U2	157	36x4 <sup>1</sup>	Con K-4	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	PC Opt	Bos	B-L 35	Tim 6560	W F	8.50	45.6	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5300			
Gary K25	148	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	28.9 L	PC McC	Non	B-L 35	Tim 6566	W F	8.50	41.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5500			
G.M.C. K-41A	146	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	25.6 L	FP Own	Non	B-L 35	Tim 6560	W F	8.75	42.5	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5895			
G.M.C. K-41B	158	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	25.6 L	FP Own	Non	B-L 35	Tim 6560	W F	8.66	42.8	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5770			
G.M.C. K-41C	158	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	25.6 L	FP Own	Non	B-L 35	Tim 6560	W F	7.60	40.5	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4910			
Gramme-Bernstein 125	144	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Own	Non	B-L 35	Tim 6560	W F	8.25	46.0	B	Col 4910	Per	St.M. Mot	Non	Mat	Col 4910	Per	St.M. Mot	Non	5400			
Griss-Werner 80	163 <sup>1</sup> ‡	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	PC Wau	Non	B-L 35	Tim 6560	W F	7.50	46.8	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	6800			
Harvey Preb	160	36x4 <sup>1</sup>	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	28.9 L	PC McC	Non	B-L 35	Tim 6560	W F	8.75	49.4	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4950			
Independent H.W.	160	36x4 <sup>1</sup> *	Own 41	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	8.50	44.9	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5400			
Indiana 26	159 <sup>1</sup> ‡	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	41.5	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5650			
Kankakee H.	144	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	42.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	5750			
Kelly-Springfield K75	154	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Kimbball A.C.	154	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
King Zeitzer	156 <sup>1</sup> ‡	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Kleiber K45	140	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Krebs K45	158	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Lange E.	153	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Larabee K5	156 <sup>1</sup> ‡	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Luedinghaus.	145 <sup>1</sup> ‡	36x4 <sup>1</sup>	Own 38	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	27.2 L	FP Non	Non	B-L 35	Tim 6560	W F	7.75	47.0	A	Own	Mar	St.M. Mot	Non	Mat	Own	Mar	St.M. Mot	Non	4900			
Mack AB...	3400	36x5 <sup>1</sup> ‡	Own AB	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	28.9 L	SP Mon	Own AB	B-L 35	Tim 6566	W F	8.98	33.5	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5400			
Mack AB...	3850	36x5 <sup>1</sup> ‡	Own AB	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	28.9 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5600			
Master 41	152	36x4 <sup>1</sup> ‡	Own AB	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
National T.	152	36x4 <sup>1</sup> ‡	Own AB	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Netco HL.	168	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Noble D-51.	162	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Ogden E2	160	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
O.K. Reliable B.	150	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Old Reliable B.	160	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Oneida C9	152	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Oshkosh BBO.	165	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Parker G-24.	150 <sup>1</sup> ‡	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Power F.	150	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Rainier R-20.	165	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Rainier R-20.	166	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Rainier R-20.	166	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Rainier R-20.	166	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Ruggles 40-H.	148	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Sandow 12	165	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Sanford W25A.	174	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon	Own AB	B-L 35	Tim 6560	W F	9.25	44.9	B	Own AB	C	D	Own AB	Mer	Own AB	Mer	Own AB	Mer	5700			
Sanford W25B.	174	36x4 <sup>1</sup> ‡	Own 40	4 <sup>1</sup> /2x5 <sup>1</sup> ‡	30.6 L	SP Mon																				

Wisconsin	3100 132	38365	Tim 6560	W <sub>1</sub> Pet	15600	Con 14	B-L 51	D <sub>1</sub> B-L 51	D <sub>1</sub> B-L 50	D <sub>1</sub> B-L 50	Non
Witt-Wil S.	2930 146	38364	Tim 6560	W <sub>1</sub> Pet	15600	Con 14	B-L 51	D <sub>1</sub> B-L 51	D <sub>1</sub> B-L 50	D <sub>1</sub> B-L 50	Non

### 3 Ton

Acme 60.	3634	3636	Opt 200	36361	Bud HU	6B	Con K-4	36361	36361	36361	36361	36361
Acme K.	156	156	156	156	Con K-4	156	Con L-4	156	156	156	156	156
Acme 60L.	114	114	114	114	Con K-4	114	Con L-4	114	114	114	114	114
Autocar H.	3560	138	3445	3445	Own H	4	Own H	4	4	4	4	4
Autocar H.	3560	138	3445	3445	Own H	4	Own H	4	4	4	4	4
Buffalo 6&12.	155	155	155	155	Her O	4	4	4	4	4	4	4
Clinton 65.	3550	180	3445	3445	Bud ETU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Concordia K.	3450	150	3445	3445	Bud EBU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Concordia J.L.	3250	158	3634	3634	Bud EBU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Corbitt R.	36361	36361	36361	36361	Bud HTU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Double Drive CN.	150	150	150	150	Bud HTU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Defence H <sub>2</sub> .	36361	36361	36361	36361	Con K-4	4	4	4	4	4	4	4
Defence H <sub>2</sub> .	175	175	175	175	Con K-4	4	4	4	4	4	4	4
Defence H <sub>3</sub> .	135	135	135	135	Con K-4	4	4	4	4	4	4	4
Defence H <sub>3</sub> .	135	135	135	135	Con K-4	4	4	4	4	4	4	4
DeMarini.	180	180	180	180	Bud ETU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Double Drive TT.	400	144	36361	36361	Bud EBU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Fageol 360 Spec.	3900	150	36361	36361	Wau CU	414x516	30.6 L	PC HU	414x516	30.6 L	PC HU	414x516
Forschler E.	5250	152	36361	36361	Has C-4	414x516	30.6 L	PC HU	414x516	30.6 L	PC HU	414x516
F.W.D. B.	4200	124	36361	36361	Wis A	414x516	30.6 L	PC HU	414x516	30.6 L	PC HU	414x516
Gottfredson 60.	3475	152	36361	36361	Bud EBUI	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Gramm-Bernstein 30.	36361	150	36361	36361	Bud EBU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
Guidler H.	152	152	152	152	Bud EBU	414x516	28.9 L	PC HU	414x516	28.9 L	PC HU	414x516
International 63.	140	140	140	140	Con L-4	4	4	4	4	4	4	4
Kenworth K-8.	3750	150	36361	36361	Wis UAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Maccar H1.	163	163	163	163	Con L-4	4	4	4	4	4	4	4
Maccar H-3.	163	163	163	163	Con L-4	4	4	4	4	4	4	4
Moreland AX.	3900	174	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Moreland AC-Bus.	4700	187	36361	36361	Con L-4	4	4	4	4	4	4	4
Netco ALX.	3700	170	36361	36361	Bud ETU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Noble D-32.	3500	162	3434	3434	Wau CU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Pierce-Arrow XB.	3500	150	3837	3837	Wau CU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Red Ball.	2300	174	36361	36361	Con K-4	4	4	4	4	4	4	4
Republic 19.	154	154	154	154	Con K-4	4	4	4	4	4	4	4
Republic 19W.	154	154	154	154	Con K-4	4	4	4	4	4	4	4
Rowe GSW.	143	143	143	143	Con K-4	4	4	4	4	4	4	4
Schacht.	36361	156	36361	36361	Con K-4	4	4	4	4	4	4	4
Selden Unit 63.	149	149	149	149	Con K-4	4	4	4	4	4	4	4
Service Unit 61.	163	163	163	163	Con K-4	4	4	4	4	4	4	4
Super Truck 60-D.	126	126	126	126	Con K-4	4	4	4	4	4	4	4
Traffic 6000.	2145	136	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Traylor D.	3300	150	36361	36361	Bud ETU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
United 60.	156	156	156	156	Con K-4	4	4	4	4	4	4	4
U.S. R.	156	156	156	156	Con K-4	4	4	4	4	4	4	4
Witt-Wil.	3225	Opt	36361	36361	Con K-4	4	4	4	4	4	4	4

### 3 1/2 Ton

American LaFrance.	4950	Opt	36361	36361	Own 3B	40x12	28.9 L	PS Own	40x12	28.9 L	PS Own	40x12
Armedier KWB.	4225	186	36361	36361	Con K-4	4	4	4	4	4	4	4
Attlebury 22D.	4275	174	40631	40631	Con K-4	4	4	4	4	4	4	4
Available JH316.	176	176	176	176	Con K-4	4	4	4	4	4	4	4
Brookway R. 12.	164	164	164	164	Con K-4	4	4	4	4	4	4	4
Bethlehem M.	3940	170	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Chicago 35.	163	163	163	163	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Clydedale 6.	170	170	170	170	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Diamond T.K.	4070	160	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Dixon A.	4400	174	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Dorr K.	130	130	130	130	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Hawkeye N.	160	160	160	160	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Indiana 35.	163	163	163	163	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Kearns T.	187	187	187	187	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Kleiber Spring'd K-41.	4850	170	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
King Zeitzer.	3625	156	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Krebs L110.	170	170	170	170	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Lange F.	4650	186	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Larabee L-4.	4100	168	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Luedinghaus.	4950	Opt	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Mack AC.	168	168	168	168	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Master 51.	160	160	160	160	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516
Mesominee G.	3600	160	36361	36361	Wau VAU	414x516	32.4 L	PC HU	414x516	32.4 L	PC HU	414x516

SEPTEMBER 15, 1924

THE COMMERCIAL CAR JOURNAL

39

For full name and address of manufacturer and information regarding complete line see page 43

Trade Name and Model	General		Engine		Electrical System		Fuel System		Clutch		Gearset		Rear Axle		Front Axle		Make and Model		Springs (Make)		Wheels (Make)		Rims (Make)		Chassis Weight (lbs.)		
	Tire Size \$s	Front (inches)	Make and Model	N.A.C.C. Rated H.P.	Bores and Stroke (inches)	Coverator (Make)	Carburetor (Make)	Fuel Feed	Generator System (Make)	Generator System (Make)	Make	Make and Model	No. of Forward Speeds	Location	Driver and Model	Type	Final Drive	High Reduction in Low	Total Reduction in High	Brakes, Location	Front Axle	Make and Model	Rear Axle	Make and Model	Front Axle	Make and Model	Front Axle
<b>3½ Ton—con'd</b>																											
National NB	164	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	8 75 46 8	A	7650	Mat	Ros	Semi	8 75 44 0	
Noble E-71	164	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 50	W-G-T 53	A	4	Spi	Tim 6666	W	E	8 75 42 0	A	7250	Tut	Lav	Bim	8 75 42 0	
Nation & LeMoon G	399½	Opt	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 50	W-G-T 53	A	4	Spi	Tim 6666	W	E	8 75 40 0	A	6000	G-C	Ros	Semi	8 75 40 0	
Northway C-3½	178	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 5 55 2	A	7300	Tut	Ros	Semi	8 75 42 0	
O.K. Y.	178	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	8 75 55 1	A	6550	Tut	Ros	Semi	8 75 42 0	
Old Reliable C	4250	164	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 49 6	A	8000	She 4FA20	She	Semi	8 75 42 0
Oneida D	4050	170	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 48 7	A	8000	Mat	Ros	Semi	8 75 42 0
Parker J-24	4300	160	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 0 48 6	A	7400	Tut	Ros	Semi	8 75 42 0
Power C	160	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 45 2	A	7400	Tut	Ros	Semi	8 75 42 0	
Rainier R-25	1400	170	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 45 2	A	7400	Tut	Ros	Semi	8 75 42 0
Sandow M	3895	174	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 45 2	A	7400	Tut	Ros	Semi	8 75 42 0
Sandow M	3895	174	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 45 2	A	7400	Tut	Ros	Semi	8 75 42 0
Sandow M	3895	174	36x6½	Wau DÜ	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	10 3 45 2	A	7400	Tut	Ros	Semi	8 75 42 0
Signal M	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Signal M	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Signal M	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Signal M	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Signal M	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 55	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 K	204	36x5	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A	7700	Tut	Ros	Semi	8 75 42 0	
Standard 3½-5 KRS	160	36x6½	Con L-4	4½x6½	32.4 L	PC Wau	Bus	Zen	Non	M-E	P	B-L 60	W-G-T 53	A	4	Spi	Tim 6666	W	E	12 0 58 0	A</td						



for full name and address of manufacturer and information regarding complete line see page 43

SEPTEMBER 15, 1924

## THE COMMERCIAL CAR JOURNAL

43

## Manufacturers and Models Included in the Specification Tables

List Includes Manufacturers of Buses and Electric Trucks

## Manufacturers Who Distribute Nationally

Note: This grouping of the manufacturers has been made from the best information at hand. Manufacturers are invited to furnish us with further information in relation to their distribution which will enable us to make this grouping as correct as possible.

Acme—1½, 2, 2½, 3, 4, 5, 6½—Bus—Acme Motor Truck Co., Cadillac, Mich.  
 American-LaFrance—2½, 3½, 5—T.T.—American-LaFrance Fire Engine Co., Inc., Elmira, N. Y.  
 Armleder—1½, 2½, 3½—O. Armleder Motor Truck Co., Cincinnati, Ohio.  
 Atterbury—1½, 2½, 3½, 5—Atterbury Motor Car Co., Buffalo, N. Y.  
 Autocar—1, 1½, 1½, 2, 2½, 3, 4, 5, 6—T.T.—Autocar Co., Ardmore, Pa.  
 Bessemer—1, 1½, 2½, 4—Bessemer Motor Truck Co., Plainfield, N. J.  
 Bethlehem—1, 2, 2½, 3½—Bethlehem Motors Corp., Allentown, Pa.  
 Bridgeport—1½, 2½, 4—Bus—Bridgeport Motor Truck Corp., Stratford, Conn.  
 Brockway—1, 1½, 2½, 3½, 5—Bus—Brockway Motor Truck Corp., Cortland, N. Y.  
 C. T. Elec.—½, ¾, 1, 2, 3, 3½, 5—Commercial Truck Co., Phila., Pa.  
 Chevrolet—½, 1—Chevrolet Motor Co., G. M. C. Bldg., Detroit, Mich.  
 Clydesdale—1¼, 2½, 3½, 5, 7—Clydesdale Motor Truck Co., Clyde, Ohio.  
 Commerce—1, 1½, 2½—Bus—Commerce Motor Truck Co., Ypsilanti, Mich.  
 Day-Elder—1½, 2, 2½, 3, 4, 5—Bus—Day-Elder Motors Corp., Newark, N. J.  
 Defiance—1¼, 1½, 2, 3—Defiance Motor Truck Co., Defiance, Ohio.  
 Diamond T—1, 1½, 1½, 2½, 3½, 5—Diamond T Motor Car Co., Chicago, Ill.  
 Dodge Brothers—¾—Dodge Brothers, Inc., Detroit, Mich.  
 Double Drive—3—Double Drive Truck Co., Benton Harbor, Mich.  
 Duplex—1, 1½, 2, 2½, 3½—Bus—Duplex Truck Co., Lansing, Mich.  
 F. W. D.—3—Four-Wheel Drive Auto Co., Clintonville, Wis.  
 Fageol—2, 3, 4, 6—Bus—Fageol Motors Co., Oakland, Cal.  
 Federal—1, 1½, 2, 2½, 4, 5—Bus—T.T.—Federal Motor Truck Co., Detroit, Mich.  
 Fifth Avenue—Bus—Fifth Avenue Coach Co., New York City.  
 Ford—1—Ford Motor Co., Highland Park, Mich.  
 Front Drive—1½—Double Drive Truck Co., Benton Harbor, Mich.  
 G. M. C.—1, 2½, 3½, 5—T.T.—General Motors Truck Co., Pontiac, Mich.  
 Garford—1, 1½, 4, 5, 7½—Bus—Garford Motor Truck Co., Lima, Ohio.  
 Gary—1, 2, 2½, 3½, 5—Gary Motor Corp., Gary, Ind.  
 Gotfredson—1, 1½, 2, 3, 4, 5—Gotfredson Truck Corp., Detroit, Mich.  
 Graham—1, 1½—Graham Brothers, Detroit, Mich.  
 Gramm-Bernstein—1, 1½, 1½, 2, 2½, 3, 3½, 4, 5, 6—Gramm-Bernstein Motor Truck Co., Lima, Ohio.  
 Indiana—1, 1½, 2, 2½, 3½, 5—Indiana Truck Corp., Marion, Ind.  
 International—1, 1½, 2, 3, 5—Bus—International Harvester Co. of America, Chicago, Ill.  
 Kelland (Elec.)—½, ¾, 1—Kelland Motor Car Co., Newark, N. J.  
 Kelly-Springfield—1½, 2½, 3½, 6—Kelly-Springfield Motor Truck Co., Springfield, Ohio.  
 Kissel—1, 1½, 2½, 4—Bus—Kissel Motor Car Co., Hartford, Wis.  
 Krebs—1½, 2½, 3½, 5—Krebs Motor Truck Co., Bellevue, Ohio.  
 Lansden (Elec.)—½, 1, 2, 3½, 5, 6—Lansden Company, Danbury, Conn.  
 Larrabee-Deyo—1¼, 1½, 2½, 3½—Bus—Larrabee-Deyo Motor Truck Co., Inc., Binghamton, N. Y.  
 Macfar—1½, 2, 3, 4, 5—Macfar Truck Co., Scranton, Pa.  
 Mack—1½, 2, 2½, 3½, 5, 6½, 7½—Bus—T.T.—International Motor Co., New York, N. Y.  
 Mason Road King—1½—Mason Motor Truck Co., Flint, Mich.  
 Master—1½, 1½, 2½, 3½, 5, 5½—Bus—Master Motor Truck Mfg. Co., Chicago, Ill.  
 Menominee—1, 1½, 1½, 2, 3½, 5—Bus—Menominee Motor Truck Co., Clintonville, Wis.  
 Nash—1, 2, 2½—Nash Motors Co., Kenosha, Wis.  
 Northway—1½, 2, 3½—Northway Motors Corp., Natick, Mass.  
 O. B.—2, 3½, 5—O. B. Electric Vehicles, Inc., Long Island City, N. Y.  
 Oshkosh—2½, 4—Oshkosh Motor Truck Mfg. Co., Oshkosh, Wis.  
 Overland—½—Willys-Overland Co., Toledo, Ohio.  
 Patriot—1, 2, 3—Patriot Mfg. Co., Havelock, N. C.  
 Penn—1, 2—Penn Motors Corp., Philadelphia, Pa.  
 Pierce-Arrow—2, 3, 4, 5, 6, 7½, T.T.—Bus—Pierce-Arrow Motor Car Co., Buffalo, N. Y.  
 Reo—1½—Bus—Reo Motor Car Co., Lansing, Mich.  
 Republic—1½, 2, 2½, 3, 4½—Bus—Republic Motor Truck Co., Inc., Alma, Mich.  
 Rowe—2½, 3, 4, 5—Rowe Motor Mfg. Co., Lancaster, Pa.  
 Ruggles—½, 1½, 2, 2½—Ruggles Motor Truck Co., Saginaw, Mich.  
 Sandow—1, 1½, 2, 2½, 3½, 5—Sandow Motor Truck Co., Chicago Heights, Ill.  
 Schacht—1½, 2, 2½, 3, 4, 5—G. A. Schacht Motor Truck Co., Cincinnati, Ohio.  
 Selden—1½, 2, 3½, 5—Bus—Selden Truck Corp., Rochester, N. Y.  
 Service—1½, 1½, 2, 3, 4, 6—Service Motors, Inc., Wabash, Ind.  
 Signal—1½, 2½, 3½, 5, 6—Signal Truck Corp., Detroit, Mich.  
 Standard—1½, 1½, 2½, 3½, 5, 6—Standard Motor Truck Co., Detroit, Mich.  
 Sterling—1½, 2, 2½, 3½, 5, 7½—Bus—Sterling Motor Truck Co., Milwaukee, Wis.  
 Stewart—1, 1½, 2, 2½, 3½—Stewart Motor Corp., Buffalo, N. Y.  
 Transport—1, 1½, 2, 3½, 5—Transport Truck Co., Mt. Pleasant, Mich.  
 Traylor—1½, 2, 3, 5—Traylor Eng. & Mfg. Co., Allentown, Pa.  
 United—1, 1½, 2, 2½, 3, 3½—United Motor Products Co., Grand Rapids, Mich.  
 Walker (Elec.)—½, ¾, 1, 2, 3½, 5—Walker Vehicle Co., Chicago, Ill.  
 Ward (Elec.)—750 lb. to 7 Ton—Ward Motor Vehicle Co., Mt. Vernon, N. Y.  
 White—½, 2, 3½, 5—Bus—White Co., Cleveland, Ohio.  
 Yellow Cab—½, 1—Bus—Yellow Cab Mfg. Co., Chicago, Ill.

## Manufacturers Who Distribute Locally

Acorn—2½—Acorn Motor Truck Co., Chicago, Ill.  
 Ace—1½, 3—Bus—American Motor Truck Co., Newark, Ohio (receiver).  
 Available—1½, 2, 2½, 3½, 5—Available Truck Co., Chicago, Ill.  
 Betz—1, 2½—Betz Motor Truck Co., Hammond, Ind.  
 Brinton—1½, 2½—Brinton Motor Truck Co., Philadelphia, Pa.  
 Buffalo—2, 3—Buffalo Truck and Tractor Corp., Clarence, N. Y.  
 Casco—1—Casco Motors, Inc., Sanford, Me.  
 Chicago—1½, 2½, 3½, 5—Chicago Motor Truck, Inc., Chicago, Ill.  
 Clinton—1½, 2, 3, 4, 5 to 7—Bus—Clinton Motors Corp., Reading, Pa.  
 Columbia—1½, 2½, 3—Columbia Motor Truck Co., Pontiac, Mich.  
 Concord—1, 2, 2½, 3—Abbott-Downing Truck & Body Co., Concord, N. H.  
 Corbitt—¾, 1, 1½, 2, 2½, 3, 4, 5—Corbitt Motor Truck Co., Henderson, N. C.  
 De Martini—1½, 2, 3, 4—De Martini Motor Truck Co., San Francisco, Cal.  
 Denby—5—Denby Motor Truck Co., Detroit, Mich.  
 Diehl—1, 1½—Diehl Motor Truck Works, Philadelphia, Pa.  
 Dixon—1½, 2, 2½, 3½, 5—Dixon Motor Truck Co., Altoona, Pa.  
 Dorris—1, 2½, 3½—Dorris Motor Car Co., St. Louis, Mo.  
 Eagle—1½, 2—Eagle Motor Truck Corp., St. Louis, Mo.  
 Fulton—1, 2—Fulton Motors Corp., Farmingdale, N. Y.  
 G. W. W.—1½, 2—Wilson Truck Mfg. Co., Henderson, Iowa.  
 Grass Premier—1, 1½, 2, 2½, 3½—Grass Premier Truck Co., Sauk City, Wis.  
 Guilder—1½, 2, 3, 4, 5, 6—Bus—Guilder Engineering Co., Poughkeepsie, N. Y.  
 Harvey—2½, 3½, 6, 10—T.T.—Harvey Motor Truck Co., Harvey, Ill.  
 Hawkeye—1½, 2½, 3½—Hawkeye Truck Co., Sioux City, Iowa.  
 Independent—1, 1½, 2½—Independent Motor Truck Co., Inc., Davenport, Iowa.  
 Kalamazoo—Kalamazoo Motor Corp., Kalamazoo, Mich.  
 Kankakee—2½—Kankakee Motor Truck Co., Kankakee, Ill.  
 Kearns—1, 2, 3½, 5—Kearns-Dughie Motors Co., Danville, Pa.  
 Kenworth—1½, 3, 3½—Kenworth Motor Truck Corp., Seattle, Wash.  
 Kimball—2, 2½, 4, 5—Kimball Motors Corp., Los Angeles, Cal.  
 King Zeitzer—1, 1½, 2½, 3½, 5—King Zeitzer Co., Chicago, Ill.  
 Kleiber—1½, 2½, 3½, 5—Kleiber Motor Truck Co., San Francisco, Cal.  
 Lange—1½, 2½, 3½—Lange Motor Truck Co., Pittsburgh, Pa.  
 Luedinghaus—1, 1½, 2½, 3½, 5—Luedinghaus-Espenschied Wagon Co., St. Louis, Mo.  
 Moreland—1, 1½, 2, 3, 5—Moreland Motor Truck Co., Burbank, Cal.  
 National—1½, 2, 2½, 3, 3½, 4—Bus—National Steel Car Corp., Ltd., Hamilton, Ont., Canada.  
 Nelson-LeMoon—1, 1½, 2½, 3½, 5—Nelson & LeMoon, Chicago, Ill.  
 Netco—2, 2½, 3, 4—New England Truck Co., Fitchburg, Mass.  
 Noble—1, 1½, 2, 2½, 3, 3½, 4—Noble Motor Truck Co., Kendallville, Ind.  
 Ogden—1, 1½, 2½, 3½, 5—Ogden Truck Co., Chicago, Ill.  
 O. K.—1, 1½, 2, 2½, 3½—Nolan Truck Co., Okay, Okla.  
 Old Reliable—2½, 3½, 5, 6—Old Reliable Motor Truck Co., Chicago, Ill.  
 Oneida—2, 2½, 3½, 5—Oneida Manufacturing Co., Green Bay, Wis.  
 Parker—1, 1½, 2, 2½, 3, 3½, 5—Bus—Parker Motor Truck Co., Milwaukee, Wis.  
 Philadelphia Motor Coach—Bus—Phila. Motor Coach Co., Phila., Pa.  
 Pioneer—1—Pioneer Truck Co., Chicago, Ill.  
 Power—1½, 2½, 3½—Power Truck & Tractor Co., St. Louis, Mo.  
 Rainier—¾, 1, 1½, 2, 2½, 3½, 5, 6—Rainier Motor Corp., Long Island City, N. Y.  
 Red Ball—3—Red Ball Transit Co., Indianapolis, Ind.  
 Rumely—1½—Advance Rumely Thresher Co., Laporte, Ind.  
 Sanford—1, 1½, 2½, 3½, 5—Sanford Motor Co., Syracuse, N. Y.  
 Saurer—½, T.T.—Adolph Saurer, Inc., New York, N. Y.  
 Steinmetz—Steinmetz Electric Motor Car Corp., Arlington, Baltimore, Md.  
 Super Truck—2½, 3½, 5—O'Connell Motor Truck Co., Waukegan, Ill.  
 Traffic—1½, 2, 3—Traffic Motor Truck Corp., St. Louis, Mo.  
 Triangle—1, 1½, 2, 2½—Triangle Motor Truck Co., St. Johns, Mich.  
 Twin City—2, 2½, 3—Minneapolis Steel & Machinery Co., Minneapolis, Minn.  
 Union—1½, 2, 4, 6—Union Motor Truck Co., Bay City, Mich.  
 U. S.—1½, 1½, 2½, 3, 4, 5—United States Motor Truck Co., Cincinnati, Ohio.  
 Wachusett—1, 1½, 2, 2½—Wachusett Motors, Inc., Fitchburg, Mass.  
 Walker Johnson—1½, 2½, 3—Walker Johnson Truck Co., Woburn, Mass.  
 Walter (Elec.)—T.T.—Walter Motor Truck Co., Long Island City, N. Y.  
 Ward La France—2½, 3½, 5—Ward La France Truck Corp., Elmira, N. Y.  
 Wilcox—1, 1½, 2½, 3½, 5—Wilcox Trux, Inc., Minneapolis, Minn.  
 Witt-Will—1½, 2, 2½, 3, 4, 5—Witt-Will Co., Inc., Washington, D. C.

## DETAILED MOTOR

This Table Comprises Motor Bus Chassis Which Are Designed For Other Chassis Which Are Recommended and Adaptable for Bus Use See Models

Line Number	MAKE AND MODEL	GENERAL				Make and Model	ENGINE			ELECTRICAL SYSTEM				NORMAL SPEED					
		Weights		Tread			Number of Cylinders Bore and Stroke	Rated Horse Power N.A.C.C.	Valve Arrangement	Fuel System	Battery		Model						
		Chassis Only	Chassis with Body	Front	Rear						Radiator Make	Carburetor Make	Fuel Feed	Generator and Starter Make					
1	Ace C.	30	5700	204	58½	74	Mid 400	4-4½x6	32.4 H	PC	Own	Zen	V	Eis	3HVX8X				
2	Acme K.	30	6900	9900	3000	200	Cont 6B	6-3½x5	33.7 L	PC	Own	Zen	V	Eis	SJRT4				
3	Bridgeport 45.	30	3850	5500	178	60	Buda EBU	4-4½x5½	28.9 L	PC	Own	Zen	V	Eis	6-120				
4	Brockway EB.	20	3200	156	56	56	Wise SU	4-4 x5	25.6 I	PC	G&O	Zen	V	Eis	6-105				
5	Brockway J3.	25	6400	9280	2880	185	66½	71	Cont 6B	6-3½x5	33.7 L	PC	Own	Zen	Eis	12-220			
6	Clinton 65B.	30	4075	5925	8700	2728	184	58½	58½	Bud EBU	4-4½x5½	28.9 L	PC	Own	Bos	611SHK			
7	Commer 20.	14	4300	7300	3000	189	56	58	Con 6B	6-3½x5	33.7 L	PC	Own	Bos	6-90				
8	Day-Elder 20.	20	5200	2500	168	56	58	Cont K4	4-4½x5½	27.2 L	FP	Bus	Zen	V	SJRT6				
9	Day-Elder 25.	25	5600	3000	180	58	58½	Bud EBU	4-4½x5½	28.9 L	PC	Bus	Zen	V	SJRT6				
10	Day-Elder 30.	30	6000	3500	192	68½	74	Cont 6B	6-3½x5	33.7 L	PC	Bus	Zen	V	SJRT6				
11	Duplex FB.	23	5500	3000	181	58	72	Buda EBU	4-4½x5½	28.9 L	PC	Mod	Zen	V	Eis				
12	Fageol Parlor Car.	22	5365	6450	10200	218	70	76½	Has 50	4-4½x5½	28.9 I	PC	Lon	Zen	V	6-177			
13	Fageol Street Car.	29	6315	6700	10350	230	70	70	Has 75	6-4½x5½	43.6 I	PC	Lon	Zen	V	6-153			
14	Federal.	18	4200	1800	160	56	59½	Cont 6M	4-3½x5½	27.3 L	PC	Mod	Zen	V	Eis				
15	Federal.	25	5450	2500	190	60	60	Cont 6B	4-3½x5½	33.7 L	PC	Mod	Zen	V	Eis				
16	Fifth Ave. J.	29	6900	5660	8235	2575	172	68½	71½	Yell EZ	4-4 x6	25.6 X	PC	Own	Zen	Eis			
17	Fifth Ave. L.	51	8860	6670	174½	67	77½	Yell EZ	4-4 x6	25.6 X	PC	Own	Zen	G	Eis				
18	Garford 51D.	29	6500	9900	3400	187	68	75½	Buda YBU	4-4½x6	32.4 L	PC	Own	Str	V	Spl			
19	Garford 726.	25	4800	7800	3000	168	56	65½	Buda EBU	4-4½x5½	28.9 L	PC	Own	Str	V	Spl			
20	Guilder 30.	30	4500	5600	8800	3600	191	64	70	Bud EBU	4-4½x5½	28.9 L	FP	G&O	Zen	V	Eis		
21	International 33.	18	...	...	150	56½	Own 33	4-4½x5½	22.5 I	Sp	...	Own	G	Bos	Pol	6-100			
22	International 53.	29	...	...	190	64½	65	Own 53	4-4½x5	28.9 I	Sp	...	Own	V	Bos	6-200			
23	Kissel.	18	4500	5200	7780	2400	202	64½	66	Own 4-36	4-4½x5½	28.9 L	Sp	Str	V	Bos	6-153		
24	Larrabee X-2.	16	1910	3450	4850	1400	155	56	56	Cont 8R	6-3½x4½	27.3 L	PC	Fed	Zen	V	Bos	3XE15	
25	Larrabee XH3.	21	3600	4670	7670	3000	186	62	66	Cont 6B	6-3½x5	33.7 L	PC	Fed	Zen	V	Bos	36XRE25	
26	Mack AB.	24	4750	6300	11150	4850	230½	68	63½	Own AB	4-4½x5	28.9 L	PC	Own	Zen	V	Spl	6LXRE13	
27	Mack AB.	25	4250	6100	9350	3250	196	68	63½	Own AB	4-4½x5	28.9 L	PC	Own	Zen	V	Spl	6LXRE13	
28	Master.	30	6000	9500	3500	194	59	59	Buda EBU	4-4½x5½	28.9 L	PC	Chi	Zen	V	Eis	12-		
29	Menominee T.	16	2600	4290	4400	2100	175	56	56	Wise Y	4-3½x5	27.3 H	PC	...	Zen	V	Bos	6-153	
30	Menominee DB.	25	4400	6020	9100	3200	186	68	73	Wise TAU	4-4 x6	25.6 L	PC	Own	Zen	V	Eis	6-153	
31	Moreland RC.	16	2280	3850	5850	2000	180	56	57½	Herc OBX	4-4 x5	25.6 L	PC	Own	Zen	V	Spl	6HTXR15A	
32	Moreland EC.	20	3780	4590	7590	3000	178	61	58	Cont K4	4-4½x5½	27.3 L	FP	Own	Sch	V	Spl	6HTXR15A	
33	Moreland AC.	25	4700	5660	9160	3500	187	68	69	Cont L4	4-4½x5½	32.5 L	FP	Own	Sch	V	Spl	6HTXR15A	
34	Parker B23B.	16	1400	2700	4600	1900	131	58	58	Buda WTU	4-3½x5½	22.5 L	PC	Own	Zen	V	Wes	611	
35	Parker E24B.	18	2500	3600	5800	2300	150	58	Wise SU	4-4 x5	25.6 I	PC	Own	Zen	V	Wes	6-80		
36	Phila. Motor Coach P.	65	6500	8750	14650	5900	216	72	75	Own P	6-4 x6	38.4 I	FP	G&O	Zen	V	N-E	6MVE13	
37	Pierce-Arrow Z.	30	4750	6400	12000	220	68	75½	Own	4 x5½	38.0 T	FP	Own	P	Del	Wes	SJRN	50	
38	Reo W.	21	2350	3650	7150	3500	176	56	57½	Own W	6-3½x5½	24.3 L	FP	Own	Sch	V	N-E	SJRT6	6-153
39	Republie 81.	15	...	...	1800	185	60	58	Lyc	4-4 x5	38.0 L	PC	Own	Str	V	Bos	USL	6-109	
40	Selden 52.	30	7200	10200	3000	195	68	74	Cont L4	4-4½x5½	32.4 L	FP	Own	Str	V	Bos	N-E	615KPN	
41	Selden.	7200	10200	3000	195	68	74	Cont 6B	6-3½x5	33.8 L	PC	Own	Zen	V	Eis	N-E	615KPN		
42	Sterling GB2.	29	6100	10750	4550	198	64½	58½	Own CU	4-4½x5½	30.6 L	PC	Own	Zen	V	Eis	Gou	ASLR632	
43	White 50A.	25	4950	5395	198	58	67½	Own 50A	4-4½x5½	28.9 L	FP	...	...	...	...	...	...	12-	
44	Yellow Coach Z.	67	...	...	192	71	73½	Yell EZ	4-4 x6	25.6 X	PC	...	...	...	...	...	...	...	

—Pneumatic  
—Dual Pneumatic  
—Solid  
—Dual Solid  
A-K—Atwater-Kent  
A-L—Auto-Lite  
Arc—Archibald  
B-B—Borg & Beck  
Bim—Bimel  
B-L—Brown-Lipe  
Bud—Budd  
Buda—Buda

Blo—Blood  
Bos—Bosch  
Bus—Bush  
Cia—Clark  
Col—Columbia  
Cont—Continental  
D—Multiple Dry Disk  
Day—Dayton  
Del—Delco  
E-D—External Driveshaft  
Dtl—Dettaff  
E-R—External Rear Wheel

Eis—Eisemann  
Exi—Exide  
F—Head & Side (Engine)  
F—Full Floating  
½—½ Floating  
Fed—Feeders  
Fl—Flint  
Ful—Fuller  
FP—Full Pressure to all Bearings, including wrist pins  
G—Gravity  
Glo—Globe

Gem—Gemmer  
G&O—G & O  
Gou—Gould  
Hob—Hobbs  
Hink—Hinkley  
Has—Hall Scott  
Herc—Hercules  
I—In Head  
Ig—Internal Gear  
I-F—Internal Four Wheels  
Ind—Indestructible  
I-R—Internal Rear Wheels

Name and Model Number	Total Weight Resting on Four Tires	Chassis Weight—Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels
Autocar E 1F.	2400								G-E	G-E		R	Own	Row	34x4	34x5	Ross	107
Autocar E 2D.	2800								G-E	G-E		R	Own	Row	34x5	34x6	Ross	120
Autocar E 3H.	3200								G-E	G-E		R	Own	Row	34x5	36x8	Ross	128
Autocar E 4Y.	4000								G-E	G-E		R	Own	Row	34x6	36x6	Ross	138
Autocar E 5M.	4300								G-E	G-E		R	Own	Row	36x7	36x7½	Ross	138
C-T D-1.	5400	2200					14	A	55	G-E	Own	4	Flot	Shel	36x3	36x3½	W	100
C-T B-1.5.	6100	2300					14	A	60	G-E	Own	4	Flot	Shel	36x3	36x4	W	91½
C-T D-1.5.	6200	2300					14	A	60	G-E	Own	4	Flot	Shel	36x3	36x4	W	71
C-T B-2.	7300	2400					14	A	50	G-E	Own	4	Flot	Shel	36x3½	36x5	W	101
C-T D-2.	7300	2400					14	A	50	G-E	Own	4	Flot	Shel	36x3½	36x5	W	124
C-T B-4.	11750	4000					12	A	50	G-E	Own	4	Flot	Shel	36x4	36x4½	W	118
C-T C-6.	14400	4300					10	A	45	G-E	Own	4	I	D	36x4	36x4½	W	70
C-T C-7.	16900	5000					10	A	45	G-E	Own	4	I	D	36x5	36x5	W	126
C-T A-7.	17700	5800					11	A	45	G-E	Own	4	I	D	36x6	36x4½	W	60
C-T A-10.	22250	6500					10	A	45	G-E	Own	4	I	D	36x7	36x5½	W	132
Kelland AT.	1950	1000	1500			15	S	50	G-E	G-E	4	R	Flot	Mer	34x3	34x3	Ross	102
Kelland BT.	2050	1500	2000			15	S	50	G-E	G-E	4	R	Flot	Mer	34x3½	34x3½	Ross	102
Kelland CT.	2150	2000	2500			15	S	50	G-E	G-E	4	R	Flot</					

# BUS SPECIFICATIONS

## and Sold Exclusively for Passenger Transportation

### Having Sign (§) in the "COMMERCIAL CAR SPECIFICATIONS"

Line Number	TRANSMISSION				REAR AXLE				TIRES AND WHEELS				DIMENSIONS (in.)						
	Clutch	Gearset	Universal	Number of Forward Speeds	Final Drive	Type	Gear Ratio	Front Axle Make and Model	Steering Gear Make	Front Tires (in.)	Rear Tires (in.)	Wheels—Make	Rims—Make	Floor Height	Overall				
	Type and Make	Make and Model	Location	Make	Make and Model	Final Drive	Type	Total in High	Total in Low	Service Brake Type & Location	Front	Rear	Front	Rear	Length	Width	Clearance from Ground		
1	D. B. L.	B. L.	Tim 6516	Wo	5.4	I-R	Tim 1550	Ros	36x6*	36x6†	Bud	Fir	23	38	312	90	5		
2	P. B. & B.	Cot RU	Blo	Tim 6511	Wo	6.8	35.3	I-R	Tim 1540B	Ros	36x6*	36x6†	Bud	31½	27	270	75½	9½	
3	D. B. L.	B. L. 50	4	Spi	Tim 6560	Wo	6.7	I-R	She Spec	Ros	36x6*	36x6†	Bud	28½	Ind	27	231	74	
4	D. B. L.	B. L. 35	4	Spi	Col 52028	SP	5.1	E-R	Col 5084	Gem	30x5*	32x6*	Ind	31½	27	237	70½	11	
5	D. B. L.	B. L. 55	4	Spi	Cla 3D	Ig	7.0	E-D	Shu 610B	Gem	36x6*	36x6†	Sew	27½	31½	295½	84	10	
6	D. B. L.	B. L. 55	4	M-E	Tim 6566	Wo	6.5	34.8	I-R	Tim 1544B	Ros	36x6*	36x6†	Bud	30	37	270	75½	9½
7	D. B. L.	B. L. 55	4	Spi	Tim 6460	Wo	6.0	...	...	Tim 1452	Ros	32x6	32x6	Bim	30	27	231	74	9
8	D. B. L.	B. L. 35	3	Spi	Tim 6462	Wo	6.5	21.8	I-R	Col 7018	Gem	36x6*	38x7*	Van	32	30	237	70½	11
9	D. B. L.	B. L. 51	4	Spi	Tim 6566	Wo	6.7	36.1	I-R	Tim 1544	Gem	36x6*	40x8*	Van	32	30	260	75½	11
10	D. B. L.	B. L. 51	4	Spi	Tim 6511S	Wo	6.8	36.4	I-R	Shu 610	Gem	36x6*	36x6*	Van	25	27	271½	90	6½
11	D. B. L.	B. L. 50	4	Pet	Vul 4	Wo	6.5	32.1	I-R	Shu	Ros	34x5*	34x5†	Mot	27	28	268	82	9
12	D. B. L.	B. L. 50	4	Spi	Tim 6466	Wo	4.6	19.7	I-R	Tim 1524	Ros	36x6*	36x6†	Bud	19½	38	312	89	7½
13	D. B. L.	B. L. 55	4	Spi	Tim 6466	Wo	4.6	19.7	I-R	Tim 4550	Ros	36x6*	38x7*	Day	20½	38½	324	89	7½
14	P. B. & B.	Own	Tim 6460	Wo	6.5	32.5	-R	Own	Gem	35x5*	34x7*	Smi	28	28	245	...	10		
15	P. B. & B.	Det R400	Tim 6460	Wo	6.7	39.8	-R	Own	Gem	36x6*	36x8*	Smi	30	28	266½	...	10		
16	P. Own	Own J	Tim 6412	Wo	5.4	21.6	I-R	Tim 1523	Ros	36x6*	36x6	Own	29½	31	277	87½	7		
17	P. Own	Own L	Sne	Ig	F	0.6	...	E-D	Own L	Ros	36x5†	30x5†	Own	26	...	...	...	...	
18	D. Own	Own 51D	Spi	Tim 6511G	Wo	5.4	26.1	I-R	Tim 1550	Ros	36x6*	36x6	Day	28½	30	295	91	7	
19	D. Own	Own 726	Spi	Tim 6560	Wo	5.4	21.6	I-R	Own	Ros	32x6*	32x6	Day	32	30	236	78½	7½	
20	D. B. L.	B. L. 51	4	M-E	Wis 68C	R	5.8	...	E-D	Shu 5550B	Ros	36x6	36x6	Bud	26	70	300	83	11
21	D. Own	Own 33	Own 33	Ig	F	...	...	I-R	...	...	...	...	...	...	...	...	...		
22	D. Own	Own 53	Own 53	Ig	F	...	...	I-F	...	...	...	...	...	...	...	...	...		
23	D. B. L.	B. L. 35	4	Spi	Wis 60B	R	5.8	19.0	-R	Shu 610	Ros	34x7*	34x7*	Whi	34½	24	252	76	8
24	D. B. L.	B. L. 31	3	Spi	Sne Sal D	Be	7.7	27.6	E-R	Sal	Gem	34x5	34x5	Ind	29	27	220	70	11
25	D. B. L.	B. L. 31	3	Spi	She W	W	5.5	26.4	I-R	Shu 5550B	Ros	32x6	32x6	Bud	25	28	262	86	9
26	D. Own	Own AB	Own AB	R	F	6.7	21.5	I-R	Own AB	Own	36x6*	36x6*	Bud	28½	32½	310	84	8½	
27	D. Own	Own AB	Own AB	R	F	6.7	21.5	I-R	Own AB	Own	32x6*	32x6*	Bud	24½	28½	304	88	6½	
28	D. Ful	Ful GU7	Wal 25A	R	F	7.6	37.0	-R	Shu 610	Ros	36x6	40x8	StM	26	33½	...	...	...	
29	D. Det	Cot AAU	Tim 640R	R	1½	...	...	I-R	...	...	...	...	...	...	...	...	...		
30	D-Det	Cot AU	Tim 620K	R	1½	6.1	32.0	I-R	Tim 1550	Ros	36x6*	36x6†	Ind	26	30	256	86	10	
31	D. B. L.	B. L. 30	Pet	Tim 5512	Wo	5.5	22.0	E-R	Tim 1250	Ros	32x6	32x6	Own	23½	...	...	...	7	
32	D. B. L.	B. L. 51	Pet	Tim 6410	Wo	6.0	32.1	I-R	Tim 1550	Ros	34x5*	34x5†	Bud	24½	...	...	...	8½	
33	D. B. L.	B. L. 51	Pet	Tim 6511	Wo	6.0	32.1	I-R	Tim 1550	Ros	36x6*	36x6†	Bud	25½	...	...	...	9	
34	D. Ful	Ful SU2	Fli 72BA	Be	F	5.5	22.0	E-R	Fli 72BA80	Lav	32x6*	32x6*	Whi	30	21	204	66	10	
35	D. Ful	Ful SU2	Fli 72BA	Be	F	4.9	20.0	E-R	Con 600	Lav	32x6*	32x6*	Whi	28	25	218	66	10	
36	D. B. L.	B. L. 60	Ati LC-IR	Ig	D	7.0	28.0	-R	Shu 650B	Ros	34x6†	34x6†	Ind	20½	25	333½	90	8	
37	Own	Own W	Own W	Wo	F	6.0	32.0	-D	Own W	Own W	36x6	36x6	Bud	28	40	303	89	8	
38	Own	Own W	Own W	SP	½	5.7	21.0	E-R	Own W	Own	30x5	30x5†	Bud	25½	31	197	87	8	
39	Ful	Ful	Tor	Ig	D	6.2	25.0	E-D	Own	Jac	34x7	34x7	Van	21	...	270½	67½	6½	
40	D. B. L.	B. L.	Tim	Wo	F	7.7	31.0	I-R	Tim	Gem	36x5	36x5	Arc	29½	33	309	91	7	
41	D. B. L.	B. L.	Tim	Wo	F	7.7	31.0	-R	Tim	Gem	36x5	36x5	Arc	29½	33	309	91	7	
42	D. B. L.	B. L. 50	Tim	6566	Wo	5.4	28.9	I-R	Tim 1544B	Ros	36x6*	36x6†	Bud	34½	...	...	...	10½	
43	Own	Own 50A	Own 50A	R	F	5.6	23.3	-R	Own 50A	Own	36x6	36x6†	Bud	28½	36	274½	81½	9½	
44	P. Own	Own 2	Own Z	Wo	1½	6.2	...	I-F	...	...	34x5†	34x5†	...	...	...	...	...	...	

Joh—Johnson  
 Kel—Kells  
 L—L-Head  
 Lav—Lavine  
 L-N—Leece Neville  
 Lon—Long  
 M&E—Merchant & Evans  
 McC—McCord  
 Mot—Motor Wheel Corp.  
 N-E—North-East  
 NP—No Provision  
 Opt—Optional

P—Single Plate  
 Pet—Peters  
 PC—Pressure to all Crankshaft & connecting Rod Bearings—  
 Splash to other parts  
 Pol—Prest-O-Lite  
 R—Double Reduction  
 Ros—Ross  
 Rem—Remy  
 R&V—R & V Knight  
 Sal—Salisbury  
 Sew—Sewell

Sne—Snead  
 SP—Spiral Bevel  
 S—Separate Unit  
 Spi—Spicer  
 She—Sheldon  
 Spa—Sparton  
 StM—St. Marys  
 Shu—Shuler  
 Str—Stromberg  
 Sp—Splash  
 Tim—Timken

Van—Van Motor Wheels  
 V—Vacuum  
 Wal—Walker  
 Whl—Whitcomb  
 Wes—Westinghouse  
 Wil—Willard  
 Wisc—Wisconsin  
 Wis—Wisconsin  
 Wo—Worm  
 X—Sleeve Valve  
 Yell—Yellow  
 Zen—Zenith

## MERCIAL CARS

Name and Model Number	Total Weight Resting on Four Tires	Chassis Weight Exclusive of Battery	Minimum Load Capacity	Maximum Load Capacity	Chassis Price	Maximum Speed	Location of Battery	Mileage Per Charge	Motor	Controller	Speeds Forward	Drive	Rear Axle	Front Tires	Rear Tires	Steering Gear	Wheelbase	Per Cent of Weight on Rear Wheels	
Lansden Marathon.	4400	4000	2250	13	A	50	G-E	Own	...	...	4	C	D	SP	36x4	36x3½†	Bay	120	60
Lansden Marathon.	5700	7000	2950	11	A	45	G-E	Own	...	...	4	R	D	SP	36x5	36x5†	Bay	133	60
Lansden Marathon.	7500	10000	3350	10	A	40	G-E	Own	...	...	4	R	D	SP	36x6	36x6†	Bay	146	60
O. B-B.	...	...	...	13	...	...	G-E	Own	...	...	4	R	D	...	...	...	...	...	
O. B-C.	...	...	...	13	...	...	G-E	Own	...	...	4	R	D	...	...	...	...	...	
O. B-D.	...	...	...	10	...	...	G-E	Own	...	...	4	R	D	...	...	...	...	...	
Steinmetz 10.	2000	...	...	16	H&S	52	Diehl	Own	...	...	4	R	D	Russ	36x6	36x6†	Own	135	...
Steinmetz 15.	2300	...	...	16	H&S	55	Diehl	Own	...	...	4	R	D	Shel	32x4½	32x4½	Lav	106	60
Walker 12.	1900	1000	1500	15	H&S	50	G-E	Own	...	...	4	R	D	Shel	33x5	33x5	Lav	114	60
Walker 15.	2800	1500	14	A	50	West	West	5	Own	...	...	4	R	Det	32x3	32x3½	Ross	104	66
Walker 22.	3000	2000	13	A	50	West	West	5	Own	...	...	4	R	Math	34x3½	36x3½	Ross	94	66
Walker 42.	4200	4000	13	A	50	West	West	5	Own	...	...	4	R	Math	36x4	36x6	Ross	114	66
Walker P.	6000	7000	11	A	40	West	West	5	Own	...	...	4	R	Math	36x5	38x5†	Ross	131	66
Walker N.	6700	10000	10	A	40	West	West	5	Own	...	...	4	R	Math	36x6	38x6†	Ross	141	66
Walker HD.	6800	2300	2200	16	A	60	Diehl	G-E	5	B	5	R	D	...	32x3½	32x4			

# Replacement Table—Corrected Monthly

Including Piston Ring Sizes, Carburetor Sizes, Hose Sizes, Fan Belt Sizes, Brake Lining Sizes and Truck Frame Dimensions

\* Note: Under Carburetor Inlet Diameter Will be Found Either the Size of Main Air Intake or the Gasoline Fuel Line  
Fan Belt Type: V—V-Shape, F—Flat, R—Round

NAME, MODEL AND TONNAGE	ENGINE							BRAKE LINING						FRAME								
	Piston Rings	Carburetor		Upper Hose	Lower Hose	Fan Belt			Service			Emergency			Length		Width	Length		Width	Over All	Over All
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All
Ace 40-1½	3	1½	1	1	V	7	1½	8	1½	40 ½	2	F	12	3½	1½	4	4	122½	76 ½	215½	32	9
Ace 60-3	3	1½	1½	1½	V	10	2	15	1½	42 ½	2	F	13½	3½	1½	4	4	13½	3½	241	...	9½
Acme 20L-1½	3	1½	1½	1½	V	7	1½	11	1½	34	1½	F	12	3½	1½	4	4	108½	63 ½	200	34	10½
Acme 40-2	4	1½	1	1	V	8	1½	11	1½	40	1½	F	12	3½	1½	2	2	123½	74 ½	208	34	9½
Acme 40L-2	4	1½	1½	1½	V	11½	1½	12½	1½	39½	1½	F	12	3½	1½	2	2	213½	74 ½	214½	34	9½
Acme 60-3	4	1½	1½	1½	V	11½	1½	12½	1½	39½	1½	F	13	3½	1½	2	2	132½	79 ½	223½	34	10
Acme 60L-3	4	1½	1½	1½	V	11½	1½	12½	1½	41½	1½	F	13	3½	1½	2	2	140½	79 ½	235½	34	10
Acme 90-4½	4	1½	1½	1½	V	10	1½	12½	1½	41½	1½	F	15½	3½	1½	2	2	220½	127 ½	312	41 ½	6
Acme 90L-4½	4	1½	1½	1½	V	10	1½	12½	1½	40½	1½	F	15½	3½	1½	2	2	150½	95 ½	243	36	10½
Acme 125-6½	4	1½	1½	1½	V	10	1½	10	1½	40½	1½	F	18	4	½	2	2	159½	99 ½	261	37	10
American-LaFrance 2R	3	1½	1½	1½	V	11½	1½	9	1½	40½	2	F	†	†	1½	4	4	132	81 ½	244½	33	10
American-LaFrance 2R	3	1½	1½	1½	V	11½	1½	9	1½	40½	2	F	†	†	1½	4	4	156	98 ½	268½	33	10
American-LaFrance 2R	3	1½	1½	1½	V	11½	1½	9	1½	40½	2	F	†	†	1½	4	4	180	110 ½	292½	33	10
American-LaFrance 3R	3	1½	1½	1½	V	11½	1½	9	1½	42	2	F	11½	8	½	2	2	144½	89 ½	244½	35 ½	9
American-LaFrance 3R	3	1½	1½	1½	V	11½	1½	9	1½	42	2	F	11½	8	½	2	2	168½	103 ½	268½	35 ½	9
American-LaFrance 5R	3	1½	1½	1½	V	11½	1½	9	1½	42	2	F	11½	8	½	2	2	210½	125	309½	35 ½	9
American-LaFrance 3R	3	1½	1½	1½	V	11½	1½	9	1½	42	2	F	11½	8	½	2	2	192½	114 ½	291½	35 ½	9
American-LaFrance 5R	3	1½	1½	1½	V	11½	1½	9	1½	42	2	F	11½	8	½	2	2	210½	125	309½	35 ½	9
Armleder 30-1½	3	1½	1½	1½	V	11½	1½	9	1½	42	2	F	11½	8	½	2	2	210½	71 ½	215½	32	9½
Armleder 50-2½	4	1½	1½	1½	V	12	2	17½	1½	35½	2	F	13	3½	½	4	4	156	228½	32	9½	10
Atterbury 24-R	4	1½	1½	½	V	10½	1½	16	1½	34½	½	V	11½	3½	½	4	4	119½	76	211½	34	9½
Atterbury 22C-2½	4	1½	1½	½	V	10½	1½	16	1½	40½	½	F	13	3½	½	4	4	129½	78 ½	225	34	9½
Atterbury 22D-3½	4	1½	1½	½	V	10½	1½	16	1½	40½	½	F	15½	3½	½	4	4	142½	93 ½	242	37½	10½
Atterbury 24E	4	1½	1½	½	V	10½	1½	16	1½	42½	½	F	17½	4	½	4	4	159½	89 ½	263	37½	10½
Autocar XXI-F-1½	4	1½	1½	1½	V	5	1½	9½	1½	...	...	...	...	...	...	...	...	91	67	156	34	9½
Autocar XXI-G-1½	4	1½	1½	1½	V	5	1½	9½	1½	...	...	...	...	...	...	...	...	114	90	179	34	9½
Autocar XXVI-M-6	3	1½	1½	1½	V	3½	1½	3½	1½	49½	2	F	25½	2½	½	4	4	139½	80 ½	223½	34 ½	10
Autocar XXVI-L-6	3	1½	1½	1½	V	3½	1½	3½	1½	49½	2	F	25½	2½	½	4	4	175½	116 ½	259½	34 ½	10
Autocar XXVII-H-3	3	1½	1½	1½	V	3½	1½	3½	1½	47½	2	F	22½	2	½	4	4	131½	76	213½	34 ½	10½
Autocar XXVII-K-3	3	1½	1½	1½	V	3½	1½	3½	1½	47½	2	F	22½	2	½	4	4	155½	100	237½	34 ½	10½
Available J-H-1½	4	2½	1½	1½	V	11	1½	14	1½	40	2	F	48	2½	½	2	2	156	80 ½	201½	32	9
Available J-H-2	4	2½	1½	1½	V	12	1½	14	1½	40	2	F	48	2½	½	2	2	120	84½	212	32	9
Available J-H-2½	3	2½	1½	1½	V	11	1½	14	1½	40	2	F	13½	3½	½	4	4	144	85 ½	226½	32	9
Available J-H-3½	4	2½	1½	1½	V	12	1½	14	1½	42	2	F	16	3½	½	4	4	168	106 ½	254½	36	9
Available J-H-5	3	2½	1½	1½	V	12	2	16	2	40	2	F	18	4	½	4	4	168	112 ½	263½	38	9
Bessemer G-1	3	½	1	½	V	11½	2½	10	2½	42	½	V	46	2½	½	2	2	98½	58 ½	182½	34	...
Bessemer H-2-1½	3	½	1	½	V	11½	2½	10	2½	43	½	V	16½	3½	½	2	2	116	76	203	34	...
Bessemer J-2½	3	½	1	½	V	12	1½	5	1½	36½	1½	F	36½	2½	½	2	2	142½	92 ½	229	34	...
Bessemer K-2-4	3	½	1	½	V	11½	2½	10	2½	39½	1½	F	55	3½	½	2	2	157½	108	249	38	...
Bethlehem KN-1	3	½	1	½	V	8½	2½	8	2½	35½	1½	F	20½	1½	½	2	2	89½	50 ½	175	32 ½	10½
Bethlehem GN-2	3	½	1	½	V	8½	2½	8	2½	40½	1½	F	51	2½	½	1	1	116½	74	208½	34 ½	9½
Bethlehem L	3	½	1	½	V	8½	2½	9½	2½	40½	1½	F	51	2½	½	1	1	134½	81 ½	226½	34 ½	8½
Betz J-3-1	1	½	1	½	V	12	1½	17	1½	33½	1½	F	11	3	½	4	4	126	90	215	34	10
Bets D-3½	3	½	1	½	V	12	2½	12	1½	33½	1½	F	12	3½	½	4	4	120	18 ½	215	34	...
Binton C-1½	3	½	1	½	V	11	1½	13	1½	33	1½	F	39	2½	½	1	1	118	18 ½	215	34	...
Binton D-2½	3	½	1	½	V	11	1½	13	1½	33	1½	F	13	3½	½	2	2	135½	72	222	34	...
Brookway S-12-1½	3	1	½	1	V	10½	2½	5½	2½	39	1½	F	10	3½	½	4	4	118	72	118½	32	...
Brookway K-11-2½	4	1½	1½	1½	V	6½	1½	13	1½	34	1½	F	13	3½	½	4	4	142	89 ½	223½	34	...
Brookway R-12-3½	4	1½	1½	1½	V	9½	1½	14	1½	34	1½	F	15½	3½	½	4	4	176	102½	233½	36	...
Brookway T-6-5	4	1½	1½	1½	V	13	2	22	2	40½	2	F	17½	4	½	4	4	176	104 ½	233½	36	...
Buffalo 9, 6	4	1½	1½	1½	V	7	1½	13	1½	41½	2	F	21	2½	½	4	4	124	82½	224	34	9½
Casco A-1	4	½	1½	½	V	12	1½	14½	1½	34½	1½	F	48½	2½	½	1	1	104	61	192½	34	10
Chevrolet Sup. Com. Chassis	3	½	1	½	V	7½	1½	5½	2½	29½	1½	F	29½	2½	½	2	2	128½	134 ½	38 ½	9½	10
Chevrolet Utility Exp.	3	½	1	½	V	7½	1½	5½	1½	29½	1½	F	37	2½	½	2	2	128½	134 ½	37	10	...
Chicago 20-1½	4	½	1	½	V	12	1½	15	1½	34½	1½	F	21	2½	½	4	4	145½	75 ½	211½	32	...
Chicago 25-2½	4	½	1	½	V	12	1½	15	1½													

## Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE						BRAKE LINING						FRAME														
	Piston Rings		Carburetor		Upper Hose	Lower Hose	Fan Belt		Service			Emergency			Length		Width		Length		Width		Over All		Clearance at Lowest Point of Chassis		
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All					
Columbia G-2½...	3	1½	1¼	1	V	10	1½	12	1½	F	26	2	1/16	4	26	2	1/16	4	Opt	Opt	Opt	Opt	32½	9			
Columbia K-3...	3	1½	1½	1	V	11	1½	13	1½	F	28	2	1/16	4	26	2	1/16	4	Opt	Opt	Opt	Opt	32½	9			
Commerce 11-2000...	3	1½	1	1	V	10	2	10	2	F	50	2	1/16	4	48½	2	1/16	4	92%	53%	193	34	8½	12½			
Commerce 25B-5000...	4	1½	1	1½	V	9½	1½	15½	1½	F	11½	3½	1/16	4	11½	3½	1/16	4	117	75	210	34	34	34			
Concord E-1...	4	1½	1	1	H	7	1½	13	1½	F	13	3½	1/16	4	13	3½	1/16	4	4	132	84	228½	34	34	34		
Concord G-2...	4	1½	1	1	H	7	1½	13	1½	F	13½	3½	1/16	4	13½	3½	1/16	4	4	4	4	4	32½	32½			
Concord H-2...	4	1½	1	1	H	7	1½	13	1½	F	13½	3½	1/16	4	13½	3½	1/16	4	4	4	4	4	32½	32½			
Concord J-2½...	4	1½	1	1	H	7	1½	13	1½	F	13½	3½	1/16	4	13½	3½	1/16	4	4	4	4	4	32½	32½			
Corbitt S-½...	3	1½	1	1	H	8	2	14	2	F	16½	1½	1/16	4	16½	1½	1/16	4	103	59	196	34	11½	11½			
Corbitt E-1...	3	1½	1	1	H	9	2	12	2	F	16½	1½	1/16	4	16½	1½	1/16	4	104	62	198	34	11½	11½			
Corbitt D-1½...	3	1½	1	1	V	11	1½	15	1½	F	18	2	1/16	4	18	2	1/16	4	110	72	206	34	10	10			
Corbitt C-2...	3	1½	1	1	V	13	1½	15	1½	F	22½	2½	1/16	4	22½	2½	1/16	4	132	78	230	35	10½	10½			
Corbitt B-2½...	3	1½	1	1	V	13	1½	15	1½	F	22½	2½	1/16	4	22½	2½	1/16	4	136	78	232	35	10½	10½			
Corbitt R-2½-3...	3	1½	1	1	V	14	1½	8	1½	F	22½	2½	1/16	4	22½	2½	1/16	4	153	92	254	35	10½	10½			
Corbitt A-3½-4...	3	1½	1	1	V	14	1½	46	1½	F	21	4	1/16	2	168	106	266	35	9	9	9	9					
Corbitt AA-3...	3	1½	1½	1	V	13	2	14	2	F	68½	3	1/16	2	168	106	268	38	10	10	10	10					
Day-Elder AN-1½...	3	1½	1	1½	V	6½	1½	7	1½	F	10½	3	1/16	4	10½	3	1/16	4	106½	62½	191	35	35	35			
Day-Elder BN-2...	3	1½	1	1½	V	4	1½	12½	1½	F	11½	3½	1/16	4	11½	3½	1/16	4	4	4	4	4	120	78½			
Day-Elder DN-2½...	3	1½	1	1½	V	4	1½	12½	1½	F	13½	3½	1/16	4	13½	3½	1/16	4	4	4	4	4	132	72½			
Day-Elder CN-3...	3	1½	1	1½	V	10½	2	12	1½	F	13½	3½	1/16	4	13½	3½	1/16	4	4	4	4	4	123½	77½			
Day-Elder FN-4...	3	1½	1	1½	V	7½	1½	12½	1½	F	15½	3½	1/16	4	15½	3½	1/16	4	4	4	4	4	120½	81½			
Day-Elder EN-5-6...	4	1½	1	1½	V	12½	2	12	1½	F	17½	4	1/16	4	17½	4	1/16	4	154	94	253	37	37	37			
Defiance G-2½-1...	3	1½	1	1½	V	10	2	8	2	F	20	1½	1/16	4	20	1½	1/16	4	90	56	179½	34	34	34			
Defiance GL2-1½...	3	1½	1	1½	V	10	2	8	2	F	20	1½	1/16	4	20	1½	1/16	4	119½	76½	203	34	34	34			
Defiance D-2½-1...	3	1½	1	1½	V	10	2	8	2	F	45	2½	1/16	4	43½	2½	1/16	4	119½	76½	203	34	34	34			
Defiance E2-2...	3	1½	1	1½	V	10	2	8	2	F	52	2½	1/16	4	37	2½	1/16	4	119½	76½	203	34	34	34			
Defiance EL-2-2...	3	1½	1	1½	V	10	2	8	2	F	61	2½	1/16	4	47	2½	1/16	4	136½	93½	220	34	34	34			
Defiance H2-3...	3	1½	1	1½	V	11½	1½	9	1½	F	61	2½	1/16	4	47	2½	1/16	4	143½	100½	238	34	34	34			
Defiance HL-2-3...	3	1½	1	1½	V	11½	1½	9	1½	F	61	2½	1/16	4	47	2½	1/16	4	101½	66½	190	34	34	34			
Defiance H-3...	3	1½	1	1½	V	11½	1½	9	1½	F	61	2½	1/16	4	47	2½	1/16	4	101½	66½	190	34	34	34			
Diamond T-75-1½-1...	3	1½	¾	1	V	8	1½	10½	1½	F	22	2½	1/16	4	2	46½	2½	1/16	1	90	57½	182½	34	34	34		
Diamond T-03-1-1½...	3	1½	1	1½	V	9	1½	6	1½	F	48	2½	1/16	4	2	33	2½	1/16	2	100	...	...	34	34	34		
Diamond T-T-1½...	3	1½	1	1½	V	9	1½	6	1½	F	48	2½	1/16	4	4	11½	3½	1/16	4	4	4	4	4	4	34	34	
Diamond T-U2-2½...	3	1½	1	1½	V	9	1½	6	1½	F	48	2½	1/16	4	4	13½	3½	1/16	4	4	4	4	4	4	34	34	
Diamond TK-3½...	3	1½	1	1½	V	10	1½	10	1½	F	55	3½	1/16	4	4	15½	3½	1/16	4	4	4	4	4	4	37	37	
Diamond T-S-5...	3	1½	1	1½	V	9	2	21	2	F	18	4	1/16	4	2	27	2	1/16	2	90	48	174	11	11	11		
Diehl A...	4	1½	1	1	V	11	1½	8	1½	F	13	4½	1/16	4	4	13	3½	1/16	4	4	4	4	4	4	126	71	
Dixon Model D...	4	1½	1	1½	V	11	1½	12	1½	F	13	3½	1/16	4	4	13	3½	1/16	4	4	4	4	4	4	71	221½	
Dixon Model C...	4	1½	1	1½	V	12	1½	10	1½	F	13	3½	1/16	4	4	13	3½	1/16	4	4	4	4	4	4	71	221½	
Dodge Brothers ½...	4	1½	1	1½	V	9	1½	7½	1½	F	19½	2½	1/16	4	14½	1½	1/16	4	4	4	4	4	4	4	9½		
Dorris K-4-2...	3	1½	1	1½	V	2½	1½	6½	1½	F	13½	3½	1/16	4	4	13½	3½	1/16	4	4	4	4	4	4	42½	96½	
Dorris K-7-3½...	3	1½	1	1½	V	2½	1½	6½	1½	F	15½	3½	1/16	4	4	15½	3½	1/16	4	4	4	4	4	4	178½	130½	
Double Drive TT-3...	4	1½	1	1½	V	12	2	19	2	F	8½	4	1/16	4	4	18	4	1/16	4	4	4	4	4	4	216	34	
Duplex G...	4	1½	1	1	V	—	—	—	—	F	11	2½	1/16	4	4	11	2½	1/16	4	4	4	4	4	4	102	34	
Duplex GH...	4	1½	1	1	V	—	—	—	—	F	19	2	1/16	4	4	19	2	1/16	4	4	4	4	4	4	112	34	
Duplex A...	3	1½	1	1	V	—	—	—	—	F	20	2½	1/16	4	4	20	2½	1/16	4	4	4	4	4	4	121	34	
Duplex AC...	3	1½	1	1	V	—	—	—	—	F	26	2	1/16	4	4	26	2	1/16	4	4	4	4	4	4	140	34	
Duplex E...	3	1½	1	1	V	—	—	—	—	F	10	2½	1/16	4	4	10	2½	1/16	4	4	4	4	4	4	128	40	
Duplex FD...	4	1½	1	1	V	—	—	—	—	F	26½	4	1/16	4	4	26½	4	1/16	4	4	4	4	4	4	102	34	
Eagle 100-2...	4	1½	1	1	V	14	2	16	1½	F	36	1½	...	2	49½	3	1½	2	46	2	1/16	2	2	2	2	36	36
Eagle 101-1½...	4	1½	1	1	V	14	2	16	1½	F	34	1½	...	2	49½	3	1½	2	46	2	1/16	2	2	2			

## Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE						BRAKE LINING						FRAME														
	No. per Cyl.	Piston Rings		Carburetor		Upper Hose	Lower Hose	Fan Belt		Service		Emergency		Length		Width	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis						
		Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces									
Graham Bros. BA.	4	1 1/8	1 1/8	1/4	V	9	1 1/4	7 1/4	1 1/4	34 1/2	1	F	50	2 1/2	1 1/8	2 1/2	2	20	2 1/2	1 1/8	4	96 1/2	56 1/2	202 1/2	34	10 1/2	
Graham Bros. CA.	4	1 1/8	1 1/8	1/4	V	9	1 1/2	7 1/4	1 1/4	34 1/2	1	F	50	2 1/2	1 1/8	2 1/2	2	20	2 1/2	1 1/8	4	96 1/2	56 1/2	202 1/2	34	10 1/2	
Graham Bros. DA.	4	1 1/8	1 1/8	1/4	V	9	1 1/2	7 1/4	1 1/4	34 1/2	1	F	50	2 1/2	1 1/8	2 1/2	2	20	2 1/2	1 1/8	4	62 1/2	34 1/2	168 1/2	34	10 1/2	
Graham Bros. EA.	4	1 1/8	1 1/8	1/4	V	9	1 1/2	7 1/4	1 1/4	34 1/2	1	F	50	2 1/2	1 1/8	2 1/2	2	20	2 1/2	1 1/8	4	62 1/2	34 1/2	168 1/2	34	10 1/2	
Graham Bros. FA.	4	1 1/8	1 1/8	1/4	V	9	1 1/2	7 1/4	1 1/4	34 1/2	1	F	50	2 1/2	1 1/8	2 1/2	2	20	2 1/2	1 1/8	4	132 1/2	74 1/2	238 1/2	34	10 1/2	
Gramm-Bernstein 10 Sp'd-1	3	1 1/8	1 1/2	1/4	V	12	2 1/2	14 1/2	2 1/4	29	1	F	48	2 1/2	1 1/8	2 1/2	2	26	2 1/2	1 1/8	1	97	54	180	30 1/8	...	
Gramm-Bernstein 15-1 1/2-2	3	1 1/8	1 1/2	1/4	V	10 1/4	2	6	2	39	1 1/4	F	48 1/2	2	1 1/8	2 1/2	2	45 7/8	1 1/2	1 1/8	2	120	74	205	32	...	
Gramm-Bernstein 65-1 1/2-2	3	1 1/8	1 1/2	1/4	V	10 1/4	1 1/2	12	1 1/2	32	2	F	19 1/2	1 1/4	1 1/8	2 1/2	4	19 1/2	1 1/4	1 1/8	4	120	74	205	32	...	
Gramm-Bernstein 125-2 1/2	3	1 1/8	1 1/2	1/4	V	4 1/2	1 1/2	12	1 1/2	32	2	F	8	45	2	1 1/8	2	45	2	1 1/8	2	126	77 1/2	214	32	...	
Gramm-Bernstein 30-3	3	1 1/8	1 1/2	1/4	V	11	1 1/2	9	1 1/2	33 1/2	2	F	22 1/2	2 1/4	1 1/8	2 1/2	4	22 1/2	2 1/4	1 1/8	4	129 1/2	81 1/2	226 1/2	36	...	
Gramm-Bernstein 75P-3 1/2	3	1 1/8	1 1/2	1/4	V	11	1 1/2	9	1 1/2	33 1/2	2	F	22 1/2	2 1/4	1 1/8	2 1/2	4	28 3/4	2 1/4	1 1/8	4	129 1/2	81 1/2	226 1/2	36	...	
Gramm-Bernstein 40-4	3	1 1/8	1 1/2	1/4	V	11	1 1/2	9	1 1/2	33 1/2	2	F	28 3/4	2 1/4	1 1/8	2 1/2	4	32 1/2	2 1/4	1 1/8	4	144	87 1/2	240 1/2	36	...	
Gramm-Bernstein 50-5-6	3	1 1/8	1 1/2	1/4	V	23 1/2	1 1/2	13 1/2	1 1/2	40	2	F	32 1/2	2 1/4	1 1/8	2 1/2	4	32 1/2	2 1/4	1 1/8	2	132	97	263 1/2	36	...	
Grass Premier 40A	3	1 1/8	1 1/2	1/4	V	12	2 1/2	14 1/2	2 1/4	29	1	F	48	2 1/2	1 1/8	2 1/2	2	48	2 1/2	1 1/8	2	120	74	205	32	...	
Grass Premier 60A 1/2	4	1 1/8	1 1/2	1/4	V	14	2 1/2	16	2 1/2	...	...	F	48 1/2	2	1 1/8	2	47	1 1/2	1 1/8	2	108	66	204	31	...		
Grass Premier 70A 2 1/2	4	1 1/8	1 1/2	1/4	V	11	1 1/2	9	1 1/2	33 1/2	2	F	20 1/2	2 1/4	1 1/8	2 1/2	4	20 1/2	2 1/4	1 1/8	2	124	21 1/2	31	...		
Grass Premier 90A 3 1/2	3	1 1/8	1 1/2	1/4	V	11	1 1/2	9	1 1/2	33 1/2	2	F	28 3/4	2 1/4	1 1/8	2 1/2	4	28 3/4	2 1/4	1 1/8	2	144	87 1/2	240 1/2	36	...	
Gray N-1 1/2	3	1 1/8	1 1/2	1/4	H	9	2 1/2	2 1/2	2 1/2	34 1/2	1	F	20 1/2	2 1/4	1 1/8	2 1/2	2	98	70	192	31	...					
Gray T-1	3	1 1/8	1 1/2	1/4	H	9	2 1/2	2 1/2	2 1/2	34 1/2	1	F	48	2 1/2	1 1/8	2 1/2	2	98	70	192	31	...					
G. W. W. Super.	3	1 1/8	1 1/2	1/4	V	8	1 1/2	17 1/2	1 1/4	37 1/2	1 1/4	F	49	2 1/2	1 1/8	2 1/2	2	89	72	192	32	11 1/2					
Harvey WOA-2	4	1 1/8	1 1/2	2	V	11	2	14	1 1/4	35 1/2	2	F	45	2	1 1/8	2 1/2	2	45	2	1 1/8	2	139	87	242 1/2	32	10	
Harvey WFB-2 1/2	4	1 1/8	1 1/2	2	V	11	2	14	1 1/4	35 1/2	2	F	50	2 1/4	1 1/8	2 1/2	2	50	2 1/4	1 1/8	2	139	87	242 1/2	32	10	
Harvey WHB-3 1/2	4	1 1/8	1 1/2	2	V	12	2	14	1 1/4	36 1/2	2	F	20 1/2	2 1/4	1 1/8	2 1/2	2	20 1/2	2 1/4	1 1/8	2	151 1/2	85 1/2	258 1/2	35	9	
Harvey WFT-6	4	1 1/8	1 1/2	2	V	11	2	14	1 1/4	36 1/2	2	F	50	2 1/4	1 1/8	2 1/2	2	50	2 1/4	1 1/8	2	84	52	189 1/2	32	10	
Harvey WHT-10	4	1 1/8	1 1/2	2	V	12	2	14	1 1/4	36 1/2	2	F	20 1/2	2 1/4	1 1/8	2 1/2	2	84	52	189 1/2	32	10					
Hawkeye O.	4	1 1/8	1 1/2	1	V	12	2	9	1 1/4	...	...	F	...	...	...	...	...	...	...	...	...	...	...	...			
Hawkeye K.	4	1 1/8	1 1/2	1	V	12	2	9	1 1/4	...	...	F	...	...	...	...	...	...	...	...	...	...	...	...			
Hawkeye M.	4	1 1/8	1 1/2	1	V	12	2 1/2	9	1 1/2	...	...	F	...	...	...	...	...	...	...	...	...	...	...	...			
Hawkeye N.	4	1 1/8	1 1/2	1	V	14	2 1/2	12	1 1/2	...	...	F	...	...	...	...	...	...	...	...	...	...	...	...			
Indiana 15-1 1/2	3	1 1/8	1 1/2	...	...	17	1 1/4	14	1 1/4	38 1/2	1	F	19	2	1 1/8	2 1/2	2	19	2	1 1/8	2	114	67 1/2	213 1/2	34	10 1/2	
Indiana 20-2	3	1 1/8	1 1/2	...	...	6	1 1/4	13	1 1/4	26 1/2	1	F	22 1/2	2 1/4	1 1/8	2 1/2	2	22 1/2	2 1/4	1 1/8	2	126	74 1/2	226 1/2	33	10 1/2	
Indiana 25-2 1/2	3	1 1/8	1 1/2	...	...	6	1 1/4	13	1 1/4	26 1/2	1	F	22 1/2	2 1/4	1 1/8	2 1/2	2	22 1/2	2 1/4	1 1/8	2	138	81	229 1/2	33	9 1/2	
Indiana 35-3 1/2	3	1 1/8	1 1/2	...	...	6	1 1/4	13	1 1/4	26 1/2	1	F	20 1/2	2 1/4	1 1/8	2 1/2	2	20 1/2	2 1/4	1 1/8	2	139	79 1/2	244 1/2	33 1/2	8 1/2	
Indiana 51-5	3	1 1/8	1 1/2	...	...	10	1 1/2	17 1/2	1 1/2	40 1/2	1	F	65 1/2	3	1 1/8	2 1/2	2	65 1/2	3	1 1/8	2	152 1/2	87	260	37 1/2	10 1/2	
Inter'l S-2000 lbs.-Sp. Tr.	3	1 1/8	1 1/2	1/4	V	9 1/2	2 1/2	17 1/2	2 1/4	30 1/2	1	F	38	2	1 1/8	2 1/2	2	36	2	1 1/8	2	88	2 1/2	213 1/2	34	10 1/2	
International 33-3000 lbs.	4	1 1/8	1 1/2	1/4	V	6 1/2	2 1/2	6 1/2	2 1/2	43 1/2	1	F	43 1/2	2 1/4	1 1/8	2 1/2	2	43 1/2	2 1/4	1 1/8	2	101 1/2	57 1/2	194 1/2	32	11 1/2	
International 43-4000 lbs.	4	1 1/8	1 1/2	1/4	V	6 1/2	2 1/2	6 1/2	2 1/2	43 1/2	1	F	50 1/2	2 1/4	1 1/8	2 1/2	2	50 1/2	2 1/4	1 1/8	2	109	59 1/2	202 1/2	32	11 1/2	
International 63-6000	4	1 1/8	1 1/2	1/4	V	9	2 1/2	14 1/2	2 1/2	46	1	F	50 1/2	2 1/4	1 1/8	2 1/2	2	50 1/2	2 1/4	1 1/8	2	116 1/2	67 1/2	213 1/2	34	11 1/2	
International 103	4	1 1/8	1 1/2	1/4	V	9	2 1/2	6 1/2	3	51	1	F	...	...	...	...	...	...	...	...	...	...	...	...			
Kearns H-1	3	1 1/8	1 1/2	1	H	16	2	16	2	33	1	F	42	2	1 1/8	2 1/2	2	21	2	1 1/8	2	2	90	...	...	34	...
Kearns N-1 1/2	3	1 1/8	1 1/2	1	H	18	2	18	2	33	1	F	45	2	1 1/8	2 1/2	2	22	2	1 1/8	2	133 1/2	...	...	34	...	
Kearns N-1 2	3	1 1/8	1 1/2	1	H	18	2	18	2	33	1	F	42	2	1 1/8	2 1/2	2	42	2	1 1/8	2	141	94	215 1/2	34	10 1/2	
Kearns T-3 1/2	3	1 1/8	1 1/2	1	H	18	2	18	2	33	1																

## Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE						BRAKE LINING						FRAME									
	Piston Rings		Carburetor		Upper Hose	Lower Hose	Fan Belt		Service			Emergency			Length		Width					
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Length	Type	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis
Master 64-5-6	4	1/4	1 1/2	1 1/2	V	13 1/2	2	15	1 1/2	37	F	13 1/2	4	1/4	2	18	4 1/2	1/4	2	162 1/2	39	...
Maxwell 1 1/2	3	1/4	1	1	V	7 3/4	2 1/2	3 1/2	2 1/2	36 1/2	F	31	1 1/2	2	2	24 1/2	2	2	102	36	...	
Menominee Hurryton -1	3	1/4	1 1/2	1 1/2	V	6	1 1/2	12	1 1/2	40	F	47 1/2	2 1/2	2	11	2 1/2	2	2	102 1/2	33	10 1/2	
Menominee H-1 1/2	3	1/4	1 1/2	1 1/2	V	6	1 1/2	12	1 1/2	40	F	47 1/2	2 1/2	2	2	22	2	2	122	32	10 1/2	
Menominee D-2	3	1/4	1 1/2	1 1/2	V	3	1 1/2	3	1 1/2	37 1/2	F	13 1/2	3 1/2	2	2	33 1/2	2	2	146	32	10 1/2	
Menominee HT-1 1/2	3	1/4	1 1/2	1 1/2	V	6	1 1/2	12	1 1/2	33 1/2	F	47 1/2	2 1/2	2	2	52	2	2	149	32	10 1/2	
Menominee J-3, 5	3	1/4	1 1/2	1 1/2	V	3	1 1/2	3	1 1/2	37 1/2	F	69 1/2	3 1/2	2	2	15 1/2	2	2	149	38	9	
Menominee G-3 1/2	3	1/4	1 1/2	1 1/2	V	3	1 1/2	3	1 1/2	37 1/2	F	49	2 1/2	2	2	46	2	2	108	56	208 3/8	
Moreland RR-1	3	1/4	1 1/2	1 1/2	V	8	1 1/2	11 1/2	1 1/2	34	F	12	3 1/2	2	2	12	2	2	108	56	208 3/8	
Moreland BX-1 1/2	3	1/4	1 1/2	1 1/2	V	9	1 1/2	14	1 1/2	42	F	12	3 1/2	2	2	13 1/2	2	2	132	79	226 1/2	
Moreland EX-2	3	1/4	1 1/2	1 1/2	V	9	1 1/2	13	1 1/2	42	F	49	2 1/2	2	2	46	2	2	174	101 1/2	253	
Moreland AX-3	4	1/4	1 1/2	1 1/2	V	8	1 1/2	11 1/2	1 1/2	42	F	15 1/2	3 1/2	2	2	15 1/2	2	2	192	115 1/2	271	
Moreland RX-5	3	1/4	1 1/2	1 1/2	V	10	1 1/2	13	1 1/2	42	F	49	2 1/2	2	2	46	2	2	156	100	256	
Moreland RC-Bus	3	1/4	1 1/2	1 1/2	H	9	1 1/2	13	1 1/2	42	F	13 1/2	3 1/2	2	2	13 1/2	2	2	152	102	254	
Moreland EC-Bus	3	1/4	1 1/2	1 1/2	H	9	1 1/2	13	1 1/2	42	F	15 1/2	3 1/2	2	2	15 1/2	2	2	171	114 1/2	271	
Moreland AC-Bus	3	1/4	1 1/2	1 1/2	H	9	1 1/2	13	1 1/2	42	F	15 1/2	3 1/2	2	2	15 1/2	2	2	171	114 1/2	271	
Nash 2018-1-1 1/2	4	1/4	1 1/2	1 1/2	V	3	1 1/2	7 1/2	1 1/2	36	F	49 1/2	2	2	2	20 1/2	2	1	104 1/2	61	193	
Nash 3018-2-2 1/2	4	1/4	1 1/2	1 1/2	V	3	1 1/2	7	1 1/2	44	F	50 1/2	3	2	2	20 1/2	2	1	118 1/2	65	207	
Nash 4017-2-2 1/2	3	1/4	1 1/2	1 1/2	V	16	2 1/2	14	2 1/2	40	F	49 1/2	2	2	4	25 1/2	2	1	117 1/2	85 1/2	202 1/2	
National M	3	1/4	1 1/2	1 1/2	V	12	1 1/2	18	1 1/2	42	F	12	3 1/2	2	2	12	2	1	116	65	208	
National T	3	1/4	1 1/2	1 1/2	V	10	1 1/2	17	1 1/2	40	F	13 1/2	3 1/2	2	2	13 1/2	2	1	123 1/2	80 1/2	220	
National NB-3 1/2	3	1/4	1 1/2	1 1/2	V	8	1 1/2	33 1/2	1 1/2	39 1/2	F	11 1/2	2 1/2	2	2	11 1/2	2	1	142	91	243	
Nelson & LeMoon G-1	4	1/4	1	1 1/2	V	8	1 1/2	32 1/2	1 1/2	41 1/2	F	11 1/2	3	2	2	11 1/2	2	1	65	...	11	
Nelson & LeMoon G-1 1/2	4	1/4	1	1 1/2	V	9	1 1/2	32 1/2	1 1/2	41 1/2	F	12	3 1/2	2	2	12	2	1	Opt	...	11	
Nelson & LeMoon G-2	4	1/4	1	1 1/2	V	9	1 1/2	32 1/2	1 1/2	41 1/2	F	13 1/2	3 1/2	2	2	13 1/2	2	1	Opt	...	11	
Nelson & LeMoon G-3	4	1/4	1	1 1/2	V	9	1 1/2	32 1/2	1 1/2	41 1/2	F	13 1/2	3 1/2	2	2	13 1/2	2	1	Opt	...	11	
Nelson & LeMoon G-4	4	1/4	1 1/2	1 1/2	V	9	1 1/2	32 1/2	1 1/2	41 1/2	F	16 1/2	3 1/2	2	2	16 1/2	2	1	Opt	...	11	
Nelson & LeMoon G-5	4	1/4	1 1/2	1 1/2	V	12	2	6	2	44	F	18	4	2	2	18	2	1	Opt	...	11	
Netco DK-2	3	1/4	1 1/2	1 1/2	V	12	1 1/2	16	1 1/2	40	F	13 1/2	3 1/2	2	2	13 1/2	2	1	94	234 1/2	34 1/2	
Netco HI-2 1/2-3	3	1/4	1 1/2	1 1/2	V	13	1 1/2	16	1 1/2	41 1/2	F	13 1/2	3 1/2	2	2	45	2	1	142	94	234 1/2	
Noble A-76-1 1/2	4	1/4	1 1/2	1 1/2	V	10	1 1/2	12	1 1/2	33 1/2	F	47	2 1/2	2	2	19	2	1	100	58	191	
Noble A-21-1 1/2	4	1/4	1 1/2	1 1/2	V	10	1 1/2	12	1 1/2	33 1/2	F	19	2	2	2	19	2	1	102	74	203	
Noble B-31-2	4	1/4	1 1/2	1 1/2	V	7	1 1/2	16	1 1/2	34 1/2	F	43	2 1/2	2	2	43	2	1	126	80	221	
Noble D-52-3	4	1/4	1 1/2	1 1/2	V	9	2	12	1 1/2	34 1/2	F	21	2 1/2	2	2	21	2	1	101	207	34	
Noble E-72-4	4	1/4	1 1/2	1 1/2	V	14 1/2	2	16	1 1/2	34 1/2	F	57	2 1/2	2	2	57	2	1	114	218	36	
Northway B-2-2	3	1/4	1 1/2	1 1/2	V	5 1/2	2 1/2	13 1/2	1 1/2	46 1/2	F	50 1/2	2 1/2	2	2	50 1/2	2	1	133	62	223 1/2	
Northway B-3-3 1/2	3	1/4	1 1/2	1 1/2	V	5 1/2	2 1/2	13 1/2	1 1/2	46 1/2	F	54	2 1/2	2	2	54	2	1	173	92	253 1/2	
Ogden A-2-1	3	1/4	1	1	H	12	2	6	2	44	F	11	2 1/2	1	4	11	2 1/2	1	4	108	56	186
Ogden D-1 1/2	3	1/4	1	1	H	13	2	6	2	44	F	10 1/2	3	2	2	52	2 1/2	1	144	...	33 1/2	
Ogden E-2 1/2	3	1/4	2	1	V	10	1 1/2	14	1 1/2	30	F	52	2 1/2	1	1	52	2 1/2	1	144	...	33 1/2	
Ogden F-3 1/2	3	1/4	2	1	V	11	1 1/2	16	1 1/2	36	F	15 1/2	3 1/2	2	2	36	3 1/2	1	168	...	37	
Ogden G-5	3	1/4	3	1	V	9	2	18	2	40	F	11	6	2	2	25	4	1	168	...	37	
Old Reliable B-2 1/2	3	1/4	1 1/2	1 1/2	V	12	2	6	2	44	F	54	2 1/2	1	1	54	2	1	144	...	32	
Old Reliable C-3 1/2	3	1/4	1 1/2	1 1/2	V	12	2	6	2	44	F	60	2 1/2	1	1	60	2 1/2	1	150	...	32	
Old Reliable D-5	3	1/4	1 1/2	1 1/2	V	12	2	6	2	44	F	72	3	2	2	72	3	1	156	...	34	
Old Reliable K. L. M. -7	3	1/4	1 1/2	1 1/2	V	12	2	6	2	44	F	54	3 1/2	1	1	60	4	1	158	...	36	
Oneida B9-2	3	1/4	1 1/2	1 1/2	H	9 1/2	1 1/2	14 1/2	1 1/2	38 1/2	F	48	2 1/2	1	2	48	2 1/2	1	114	...	34	
Oneida C9-2 1/2	3	1/4	1 1/2	1 1/2	H	7	1 1/2	9 1/2	1 1/2	38 1/2	F	58	2 1/2	1	2	43	2 1/2	1	138	...	34	
Oneida D9-3 1/2	3	1/4	1 1/2	1 1/2	H	9 1/2	1 1/2	12	1 1/2	40	F	16	3 1/2	1	4	16	3 1/2	1	155 1/2	...	36	
Oneida E9-5	3	1/4	1 1/2	1 1/2	H	7 1/2	1 1/2	9 1/2	1 1/2	40	F	18	4	1	4	18	4	1	177	...	38	
Oshkosh AW-2	3	1/4	1 1/2	1 1/2	H	16	2	17	2	33 1/2	F	23 1/2	3 1/2	1	1	45	2 1/2	1	108	75 1/2	189	
Oshkosh AAW-2	3	1/4	1 1/2	1 1/2	V	16	2	17	2	33 1/2	F	23 1/2	3 1/2	1	1	45	2 1/2	1	144	110 1/2	224	
Oshkosh BO-2 1/2	4	1/4	1 1/2	1 1/2	V	9 3/4	1 1/2	12	1 1/2	36 1/2	F	23 1/2	4 1/2	1	1	43	2 1/2	1	125	85 1/2	211	
Oshkosh BBO 2 1/2	4																					

## Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE						BRAKE LINING						FRAME					
	Piston Rings	Carburetor	Upper Hose	Lower Hose	Fan Belt		Service	Emergency		Length	Width	Over All	Over All	Clearance at Lowest Point of Chassis				
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Type	Length	Width	No. of Pieces	Thickness	No. of Pieces	Back of Driver's Seat to Center of Rear Axle		
Ruggles 15-3/4	3	1/4	1/4	V	12 1/2	2	20	2	34 3/4	1 1/4	F	43 7/8	2	39	1 3/4	2	128	
Ruggles 20R-1 1/4	3	1/4	1/4	V	7 1/2	2	13 1/2	1 1/4	35	1 1/2	F	48	46 5/8	2	96 5/8	55 3/8	170	
Ruggles 20AR-1 1/4	3	1/4	1/4	V	7 1/2	2	13 1/2	1 1/4	35	1 1/2	F	48	46 5/8	2	104 1/2	65	186 3/4	
Ruggles 40-2	3	1/4	1/4	V	7 1/2	2	13 1/2	1 1/4	35	1 1/2	F	47 1/2	2	33 3/4	2 1/2	2	134 1/4	
Ruggles 40H-2 1/2	3	1/4	1/4	V	7 1/2	2	13 1/2	1 1/4	35	1 1/2	F	58	44	2	134 1/4	75 1/2	224	
Sandow G-1	3	1/4	1/4	1	H	9	2	7	2	38 3/4	3/4	V	22 1/4	2	22 1/4	2 1/4	2	96
Sandow C-G-1 1/2	3	1/4	1/4	1	H	9	2	7	2	38 3/4	3/4	V	22 1/4	2	22 1/4	2 1/4	2	120
Sandow J-2 1/2	3	1/4	1/4	V	7	1 1/4	13	1 1/4	39	2 1/2	F	11 3/4	2	11 3/4	3 1/2	2	Opt	
Sandow M-3 1/2	3	1/4	1/4	V	9	1 1/2	13	1 1/4	40	2 1/2	F	13 3/2	2	11 3/4	3 1/2	2	Opt	
Sandow L-5	3	1/4	1/4	V	7 1/2	2	13 1/2	1 1/4	35	1 1/2	F	13 3/2	2	11 3/4	3 1/2	2	Opt	
Sanford W15-1 1/2	3	1/4	1/4	1	H	9	2 1/4	11	1 1/2	40	3/8	V	22 1/4	2	22 1/4	2 1/4	2	120
Sanford 25-2 1/2	3	1/4	1/4	V	8	1 1/2	11	1 1/2	46	1 1/2	F	22 1/4	2	22 1/4	2 1/4	2	144	
Sanford 35-3 1/2	3	1/4	1/4	V	9	1 1/2	11	1 1/2	46	1 1/2	F	65	2	15 5/8	2 1/2	2	144	
Sanford 50-5	3	1/4	1/4	V	9	1 1/2	11	1 1/2	46	1 1/2	F	65	2	15 5/8	2 1/2	2	144	
Saurer 5AD-6 1/2	3	1/4	1/4	V	6	1 1/2	10	1 1/2	47 1/2	1 1/2	F	1 1/2	2	15 5/8	2 1/2	2	144	
Schacht H-1 1/2	3	1/4	1/4	2	H	4 1/4	1 1/4	15	1 1/4	40	3/8	F	33	2	48	2 1/2	1	Opt
Schacht G-2 1/2-3	4	1/4	1/4	2	H	18	2	14	1 1/4	40	2	F	8 3/4	3	13 1/2	3 1/4	2	Opt
Schacht G-4-5	4	1/4	1/4	2	H	18	2	14	1 1/4	40	2	F	8 3/4	3	15	2	4	Opt
Selden 30C	4	1/4	1	1 1/4	V	6	1 1/2	11 1/2	1 1/2	41	3/8	F	11 1/4	3	11 1/4	3 1/4	4	114
Selden 50B	4	1/4	1	1 1/4	V	8 3/8	1 1/2	14 1/2	1 1/2	39 1/4	1 1/2	F	13	3 1/2	13	3 1/4	4	136
Selden 52	4	1/4	1/4	1 1/4	V	8 3/8	1 1/2	16 1/2	1 1/2	40 3/8	2	F	13	3 1/2	13	3 1/4	4	240
Selden 53B	4	1/4	1/4	1 1/4	V	11 1/2	1 1/2	16 1/2	1 1/2	40 3/8	2	F	13	3 1/2	13	3 1/4	4	136
Selden 70B	4	1/4	1/4	1 1/4	V	8 3/8	1 1/2	16 1/2	1 1/2	40 3/8	2	F	15 5/8	3 1/4	15 5/8	3 1/4	4	155
Selden 73B	4	1/4	1/4	1 1/4	V	9	1 1/2	14 3/4	1 1/2	40 3/8	2	F	17 1/4	4	17 1/4	4	4	155
Selden 90B	4	1/4	1/4	1 1/4	V	7	1 1/2	16 3/4	1 1/2	40 3/8	2	F	20	4	20	4	4	89
Service 25-1 1/2	3	1/4	1	1 1/4	V	12 1/2	1 1/2	13	1 1/2	32 5/8	1 1/2	V	11	3	11	3	4	106 3/4
Service 33-1 1/2	4	1/4	1	1 1/4	V	8	1 3/4	10	1 1/4	38	3/4	V	13	3	13	3	4	121
Service 42-2	4	1/4	1/4	1 1/4	V	10	2	10	1 1/4	38	3/4	V	13 1/2	3	13 1/2	3 1/2	4	117 3/4
Service 61-3	4	1/4	1/4	1 1/4	V	10	2	11 1/2	1 1/4	40 3/8	2	F	13 1/2	3	13 1/2	3 1/2	4	127 3/4
Service 81-4	4	1/4	1/4	1 1/4	V	10	2	11 1/2	1 1/4	40 3/8	2	F	15 5/8	3 1/4	15 5/8	3 1/4	4	144
Service 103-6	4	1/4	1/4	1 1/4	V	10	2	11 1/2	1 1/4	40 3/8	2	F	18	4	18	4	4	100 3/4
Signal NF-1	4	1/4	1 1/4	1 1/4	V	7 1/4	1 1/2	16 3/4	1 1/2	39 3/4	1 1/4	F	11 1/4	3	11 1/4	3 1/4	4	112
Signal H-1 1/2	4	1/4	1 1/4	1 1/4	V	10	1 1/2	13 1/2	1 1/2	41	1 1/2	F	11 1/4	3	11 1/4	3 1/4	4	120
Signal J-2 1/2	4	1/4	1 1/4	1 1/4	V	13 1/2	1 1/2	17	1 1/2	42	1 1/2	F	13 1/2	3	13 1/2	3 1/4	4	126
Signal M-3 1/2	4	1/4	1 1/4	1 1/4	V	10	1 1/2	13 1/2	1 1/2	42 7/8	1 1/2	F	15 5/8	3 1/4	15 5/8	3 1/4	4	178
Signal R-5	4	1/4	1 1/4	1 1/4	V	16 1/2	1 1/2	15	1 1/2	42 1/2	1 1/2	F	17 1/4	4	17 1/4	4	4	178
Standard 75-1 1/2	3	1/4	1 1/4	1 1/4	V	10	2 1/2	14 1/4	1 1/2	39 3/4	1 1/2	F	11 1/4	3	11 1/4	2 1/2	4	108
Standard 1 1/2 K-1 1/2	3	1/4	1 1/4	1 1/4	V	10 1/2	2 1/2	14 1/4	1 1/2	39 3/4	1 1/2	F	10 1/2	3	10 1/2	2 1/2	4	62 1/2
Standard 2 1/2 K-2 1/2-3	3	1/4	1 1/4	1 1/4	V	10	1 1/2	16	1 1/2	40 7/8	1 1/2	F	13 1/2	3	13 1/2	3 1/2	4	132
Standard 3 1/2 K-3 1/2-5	3	1/4	1 1/4	1 1/4	V	10	1 1/2	16	1 1/2	41 1/2	1 1/2	F	15 5/8	3 1/4	15 5/8	3 1/4	4	144
Standard 5K-5-7	3	1/4	1 1/4	1 1/4	V	8	1 1/2	3 1/2	1 1/2	42 1/2	1 1/2	F	17 1/4	4	17 1/4	4	4	93 3/4
Sterling 1 1/2	3	1/4	1/4	V	10	1 1/2	19	1 1/2	38	1 1/2	F	11 1/4	3	11 1/4	3 1/4	4	120	
Sterling 2	3	1/4	1/4	V	10	1 1/2	19	1 1/2	38	1 1/2	F	13 1/2	3	13 1/2	3 1/4	4	120	
Sterling 2 1/2	3	1/4	1/4	V	10	1 1/2	19	1 1/2	38	1 1/2	F	13 1/2	3	13 1/2	3 1/4	4	138	
Sterling 3 1/2	3	1/4	1/4	V	13 1/2	2	12	1 1/2	40 1/2	1 1/2	F	15 5/8	3 1/4	15 5/8	3 1/4	4	144	
Sterling 5-Worm	3	1/4	1/4	V	10	1 1/2	19	1 1/2	40 1/2	1 1/2	F	17 1/4	4	17 1/4	4	4	158	
Sterling 5-Chain E.H.D.	3	1/4	1/4	V	10	1 1/2	19	1 1/2	40 1/2	1 1/2	F	56 1/4	3 1/2	56 1/4	3 1/2	2	91	
Sterling 5-Ch. E.L.D.	3	1/4	1/4	V	13 1/2	2	12	1 1/2	40 1/2	1 1/2	F	56 1/4	3 1/2	56 1/4	3 1/2	2	97	
Sterling 7 1/2	3	1/4	1/4	V	10	1 1/2	19	1 1/2	40 1/2	1 1/2	F	41 1/2	2	41 1/2	2	2	158	
Stewart M15-1 1/2	3	1/4	1/4	V	18 1/2	1 1/4	19	1 1/4	37 1/2	1 1/4	F	51 1/2	2	51 1/2	2	2	99 1/2	
Stewart M9-1 1/2	3	1/4	1/4	V	18 1/2	1 1/4	19	1 1/4	37 1/2	1 1/4	F	55 1/2	2	55 1/2	2	2	132 1/2	
Stewart M7X	3	1/4	1/4	V	10	1 1/2	19	1 1/2	42	1 1/4	F	68	3	68	3	4	138	
Stewart M10X	3	1/4	1/4	V	18	1 1/2	19	1 1/2	42	1 1/4	F	60	3	60	3	4	135	
Super Truck 50	3	1/4	1/4	V	18 1/2	1 1/4	19	1 1/4	42	1 1/4	F	60	3	60	3	2	84	
Super Truck 70	3	1/4	1/4	V	18 1/2	1 1/4	19	1 1/4	42	1 1/4	F	68	3	68	3	2	144	
Super Truck 100	3	1/4	1/4	V	18 1/2	1 1/4	19	1 1/4	42	1 1/4	F	68	3	68	3	2	97 1/2	
Traffic C-4000	3	1/4	1	H	10 1/2	2	10 1/2	2	41 1/4	1 1/4	F	43 1/2	2	43 1/2	1 1/4	2	120 1/4	
Traffic 6000	3	1/4	1	H	10 1/2	2	10 1/2	2	41 1/4	1 1/4	F	52	3	52	2	2	120 1/4	
Traffic Speedboy	3	1/4	1	H	10 1/2	2	10 1/2	2	41 1/4	1 1/4	F	43 1/2	2	43 1/2	1 1/4	2	86	
Transport 15-1	3	1/4	1	V	10	2	13	2	40 3/8	1 1/4	F	48	2	48	2	2	98 1/2	
Transport 26-1 1/2	4	1/4	1	V	10	2	13	2	40 3/8	1 1/4	F	48 1/2	2	48 1/2	1 1/4	2	113 1/2	
Transport 36-2	4	1/4	1 1/4	V	10	2	16	1 1/4	3									



## *Reliability—The Unseen Quality*

THE prime requisite demanded of any truck wheel is undoubtedly reliability—the quality of rendering continuous service under all conditions of operation.

Bethlehem Rolled Steel Truck Wheels **DO** render such service.

In material used, design and adaptability, the Bethlehem Rolled Steel Truck Wheel is a step in advance of any other all-metal wheel that has been developed to replace wood wheels for use in motor truck service.

It combines the resiliency and light weight of wood wheels with the greater strength and durability of steel.

There is no repair and replacement expense with Bethlehem Rolled Steel Truck Wheels. Trucks are never laid up for repairs—either in the garage or on the road—due to defections in the wheels.

*Specify Bethlehem Rolled Steel Wheels on your next motor truck order*

BETHLEHEM STEEL COMPANY, General Offices: BETHLEHEM, PA.

*Sales Offices in the following cities:*

New York	Boston	Philadelphia	Baltimore	Washington	Atlanta	Buffalo	Pittsburgh
Cincinnati	Cleveland	Detroit	Chicago	St. Louis	San Francisco		

**BETHLEHEM**  
**ROLLED STEEL**  
**TRUCK WHEELS**



## Replacement Table—Continued

NAME, MODEL AND TONNAGE	ENGINE							BRAKE LINING					FRAME										
	Piston Rings	Carburetor		Upper Hose	Lower Hose	Fan Belt		Service			Emergency		Length		Length				Width		Width		
	No. per Cyl.	Width	Outlet Diameter	Inlet Diameter	Vertical or Horizontal	Length	Width	Length	Width	Type	Length	Width	Thickness	No. of Pieces	Length	Width	Thickness	No. of Pieces	Back of Driver's Seat	Driver's Seat to Center of Rear Axle	Over All	Over All	Clearance at Lowest Point of Chassis
Walker 12...																							
Walker 15...																							
Walker P-3½...																							
Walker N-5...																							
Walker 22...																							
Walker 42...																							
Walker Johnson L-1½...	3	¾	1¼	1½	V	7	1½	6	1½	36	1½	F	11½	3	1½	2	19½	2½	4	4	72		32
Walker Johnson B-3...	3	¾	1¼	1½	V	7	1½	5	1½	36	1½	F	13	3½	1½	4	11½	2½	4	4	90		32
Walter F...	3	¾	1½	2	V	10	1½	18	1½	39	1½	F	30	5	½	4	57	2½	4	2	140		35
Ward LaFr'e 2B-2½-3½...	3	¾	1¼	1½	V	7	1½	16	1½	41½	1½	F	13	3½	1½	4	13	2½	½	8	162		35
Ward LaFr'e 4A-3½-5...	3	¾	1¼	1½	V	8½	1½	18	1½	41½	1½	F	15½	3½	1½	4	16	2½	½	4	99		32
Ward LaFrance 5A-5½...	3	¾	1½	1½	V	9½	1½	18	1½	41½	1½	F	18	4	1½	4	18	2½	½	4	120		32
White 15A-Taxi...	3	¾	1	1½	V	7½	1	6½	1½	38	1½	F	46	2½	½	2	41½	2½	½	2	11½	69	206
White 15-¾...	3	¾	1½	1½	V	7½	1	6½	1½	38	1½	F	46	2½	½	2	41½	2½	½	2	133	74½	223
White 15-45-¾...	3	¾	1½	2	V	13½	1½	12	1½	40 ½	2	F	53½	2½	½	2	50½	2½	½	2	11½	69	206
White 20-2...	3	¾	1½	1½	V	7½	1	7½	1½	38	1½	F	55½	3½	½	2	50½	3½	½	2	146	92½	239½
White 20-D-2...	3	¾	1½	1½	V	7½	1	7½	1½	38	1½	F	55½	3½	½	2	50½	3½	½	2	98	70	191½
White 20-45-2...	3	¾	1½	2	V	13½	1½	12	1½	40 ½	2	F	11½	4	½	2	50½	3½	½	2	107½	82	214½
White 50A-Bus...	3	¾	1½	2	V	13½	1½	12	1½	45 ½	2	F	11½	4	½	2	50½	3½	½	2	168	112	274½
White 40-3½...	3	¾	1½	2	V	13½	1½	12	1½	45 ½	2	F	11½	4	½	2	25 ½	5	½	4	164	106½	267½
White 40-D-3½...	3	¾	1½	2	V	13½	1½	12	1½	45 ½	2	F	11½	4	½	2	25 ½	5	½	4	118	88½	222½
White 45-5...	3	¾	1½	2	V	13½	1½	12	1½	45 ½	2	F	11½	5	½	4	25 ½	5	½	4	164	106½	267½
White 45-D-5...	3	¾	1½	2	V	13½	1½	12	1½	45 ½	2	F	11½	5	½	4	25 ½	5	½	4	119	88½	222½
Wilcox AA-1...	3	¾	1										47½	2½	½	2	33½	2½	½	2	96		34
Wilcox B-1½...	3	¾	1½										47½	2½	½	2	33½	2½	½	2	132		33
Wilcox C-2½...	3	¾	1½										57½	2½	½	2	42½	2½	½	2	141		33
Wilcox E-3½...	3	¾	1½										57½	2½	½	2	42½	2½	½	2	156		33
Wilcox F-5...	3	¾	1½										69½	3½	½	2	52	3½	½	2	148½		36
Witt-Will P-2...	3	¾	1½	1½	V	8	1½	12	1½	31	1½	F	48	3½	½	4	48	3½	½	4	78	223	32
Witt-Will SS-3...	3	¾	1½	1½	V	8	1½	12	1½	41	1½	F	52	3½	½	4	52	3½	½	4	156	108	242
Witt-Will N-1½...	3	¾	1½	1½	V	8	1½	12	1½	31	1½	F	48	3½	½	4	48	3½	½	4	137	78	226
Witt-Will S-2½...	3	¾	1½	1½	V	8	1½	12	1½	41	1½	F	52	3½	½	4	52	3½	½	4	137	78	226
Yellow Cab M22...	3	¾	1	1½	V	8½	2	10½	2	38½	½	V	49	2½	½	2	45	2½	½	2	60		43
Yellow Cab M42-1½...	3	¾	1	1½	V	8½	2	10½	2	38½	½	V	21½	3	½	4	11½	2½	½	2	92		32
Yellow Cab Express T1...	3	¾	1	1½	V	9½	2	9½	2	39½	½	V	21½	3½	½	4	11½	2½	½	2	94½	61½	181½

## Thirtieth Annual Hardware Convention

The Thirtieth Annual Convention of the National Hardware Association will be held at the Marlborough-Blenheim, Atlantic City, Tuesday to Friday, October 14th to 17th inclusive. The opening session will be held Tuesday evening, October 14th and the regular sessions will follow morning and afternoon until Friday noon.

The Automobile Accessories Branch will have its headquarters at the Shelburne where its meeting will be held commencing Monday morning, October 13th.

## To Study Highway Freight Centers

An appraisal of various important commercial centers of the United States as highway freighting pivots will be undertaken by the division of Highway Economics of the United States Bureau of Public Roads. This work will be started with a survey of highway freighting centering at Chicago which has been ordered by Prof. J. G. McKay, chief of the division.

Prof. McKay expects the Chicago survey to require about eight months in which time information will be gathered to ascertain from where this community draws its highway freight, what this freight is composed of, ownership, its value, what routes are commonly used as well as routes more commonly avoided,

and other phases of the subject. An interesting phase of the inquiry will relate to the extent to which railroads receive freight from short haul trucks.

Among the cities to which this study will be extended in the near future are St. Louis, Detroit, Indianapolis and Milwaukee. Prof. McKay will supervise the start of the Chicago survey. He has also been overseeing the joint government and county survey of highway traffic in Chicago.

\* \* \*

An increase in the average load per car of automobiles and automobile trucks of two tenths of a ton per car over the year before is shown in a bulletin just made public by the Car Service Division of the American Railway Association. In 1923, the average load per car for automobiles and automobile trucks was 8.2 tons while in 1922 it was 8.0 tons. The figures compiled in the bulletin are the first ever tabulated for the country as a whole relative to the average load per car by commodities, and are based on reports received by the Car Service Division direct from the various carriers in response to a recent questionnaire.

\* \* \*

The Barrett-Cravens Co., Chicago, Ill., announces that it is doubling its present capacity by building four additional stories to its present building. When completed it will be the largest plant in the world devoted to the manufacture of lift jacks and portable elevators, says the announcement.

## Michigan Annual Fellowship in Highway Transport

Four fellowships in highway transport and highway engineering are to be awarded before Nov. 1st, by the University of Michigan for the coming collegiate year. These are the Roy D. Chapin Fellowship of Highway Transport, Roy D. Chapin Fellowship of Highway Engineering and two Detroit Edison Fellowships in Highway Engineering. Each fellowship pays \$250 with \$50 for expenses, with no charge for tuition. Applicants must hold a B. A. from a college of recognized standing. Details may be obtained from Professor Arthur H. Blanchard, 1026 East Engineering Building, University of Michigan, Ann Arbor, Michigan.

\* \* \*

The Long Island Railroad has taken up the motor truck for the transfer of less-than-carload freight between the western terminals of its lines. Two trucks make daily round trips over the Whitestone and Port Washington branches of this division, carrying all package freight. In the work between the Long Island City, Bushwick Avenue and Flatbush Avenue terminals, a truck in making one round trip daily saves shippers four days, as the transfer of goods between these points by rail requires five days. The trucking is on trial for 90 days, following which the railroad will consider the extension of freight hau'age by truck to other branches.



## Three Certain Results

ALMOST effortless steering on the straight-aways. Prompt acceleration on right or left turns. Road shock practically eliminated. No wonder those who value ease, comfort and surer control are turning to the Ross Cam and Lever Steering Gear. *Write for the facts.*

**ROSS GEAR AND TOOL COMPANY, 760 Heath Street, Lafayette, Indiana**

**ROSS**  
**CAM and LEVER STEERING GEARS**

**EASIER STEERING    LESS ROAD SHOCK**

## Continental Truck and Trailer Axles

**S**TANDARDIZATION of its line of trailer axles has enabled the Continental Axle Co., Edgerton, Wis., to stock the various types in sufficient quantities to relieve the makers and dealers from carrying a more or less cumbersome stock otherwise necessary. Sizes range from  $\frac{3}{4}$  to 7 tons.

This company has kept pace with the trend toward the adoption of brakes on all types of trailers and in addition is now supplying brake equipped front axles for motor trucks as well as trailers.

Illustrated herewith are the complete line of trailer axles, including the crank type for a low-platform trailer, the dead rear axle for semi-trailers which can be equipped with the fully enclosed cam-operated brakes, and the brake equipped front axle for motor trucks or trailers.

The crank axle type for trailers embodies the same general elements as regards hubs, brakes and bearings as does the standard Continental dead rear axle, but to meet the diversified need met with in transportation of heavy machinery on low trailers, the bed is made to conform to the individual requirement in tread, depth and width of crank. Some little

variation in the section of the bed is permissible also, so long as it does not interfere with the standard spindle.

The dead rear axle for semi-trailers incorporates malleable hubs machined to adapt Timken bearings. A long spindle affords wheel stability and proper proportioning of the load to each wheel bearing. The axle bed is of thoroughly heat-treated steel and the collar is forged integral at each end. An upset collar has been used to absorb the extreme end thrust. Proper anchoring of the brakes to the axle has been achieved through the use of a long keyseat in the spider seat. The brake shoes are cam-operated and lined with first grade of asbestos brake lining.

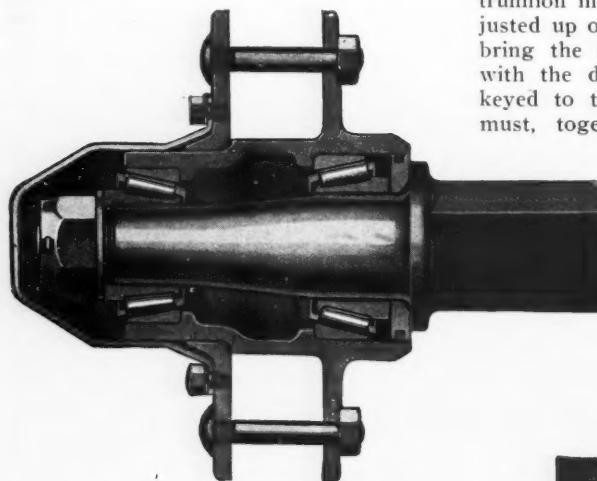
On the brake-equipped front axle the drum is mounted directly on the wheel hub, this drum being made of pressed steel, large in diameter, substantial in section and liberally flanged to defeat any distortion from the pressure of the rigid shoes.

The two brake shoes pivot on their lower ends in a trunnion which is rigidly anchored to an extension of the knuckle pin below the axle proper. While the trunnion in which they pivot may be adjusted up or down on the knuckle pin to bring the shoes into their true contact with the drum, it is at the same time keyed to the knuckle pin and therefore must, together with the shoes, rotate

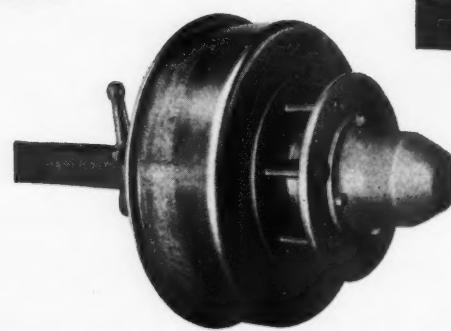
around the knuckle pin axis when the wheel is turned at an angle with the bed of the axle itself.

The operation of the brake is as follows: A pull on the brake lever brings the cam into action against the lip on the cam sleeve, forcing the latter downward. This in turn pulls the toggles downward, expanding the shoes against the drum and producing the retarding action. The shoes, toggles and cam sleeves are anchored to the knuckle pin and must turn with the spindle. The cam is fixed to the axle center and must always retain that position. However, as there is no connection between the cam and cam sleeve other than the frictional element (which is negligible), the spindle and wheel can rotate to any position with relation to the axle center and the brakes can be operated through every degree of this rotation without any interference in the steering action.

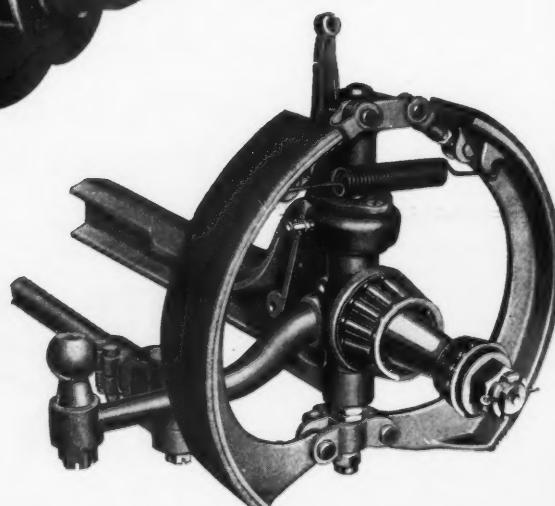
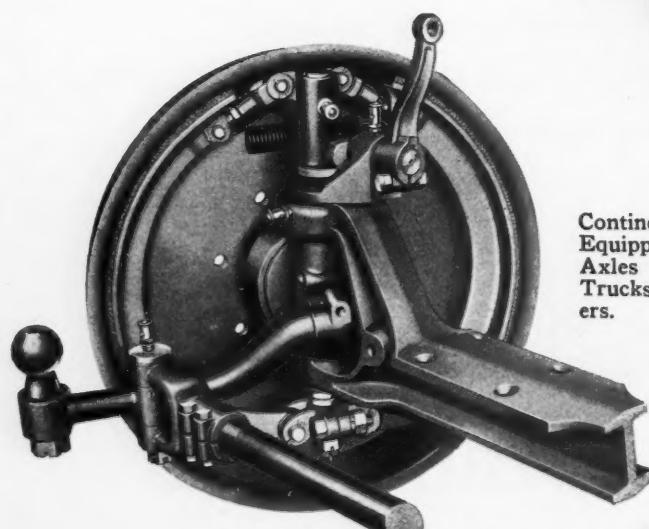
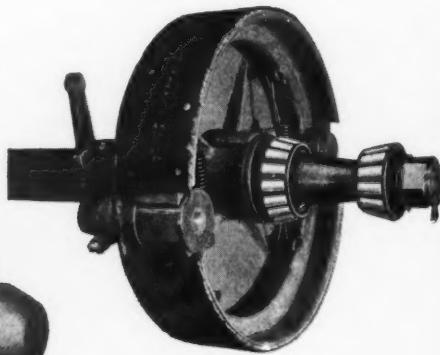
The large wholesale grocery house of John Sexton & Company, Chicago, has recently placed an order for 26 electric trucks, wiping out all horse-drawn vehicle equipment. This company decided upon electric trucks after a thorough investigation which brought out the large economies which would result from their installation. This is just another example where thorough investigation has proved conclusively that electric trucks, within their field of operation, are the most economical type of vehicle for companies having delivery or hauling work within the short-haul, frequent-stop field.



Continental Dead Rear Axles for Semi-Trailers



Continental Brake Equipped Front Axles for Motor Trucks and Trailers.



# Do you handle a "Fair Weather" Line?

TOO many automotive dealers have put all their hopes for profits in the sale of passenger cars. They didn't realize that they were cultivating the "fair weather" market until too late; that they were turning their backs on the greatest profit market of all—the field of industry. Handling passenger cars exclusively is much like owning speculative stocks—the market can play you false—you are dependent on "fair weather." But the dealer who wisely handles a good motor truck has invested in *bonds*. He handles the "bread and butter" line. The field for trucks is as big and stable as American Business itself. From the dealer's standpoint, the Acme Truck represents all that is desirable in a supplementary line. Acme's persistent-consistent performance has earned it a good reputation among owners everywhere. Nine models meet every demand of industrial transportation. And the Acme perpetual franchise, as liberal and co-operative as we know how to make it, offers you the opportunity to divide your sales efforts without dividing your financial resources. It will make the Acme line doubly attractive to you.

Let us explain to you how an Acme agency will help you build bigger, more solid profits through the months ahead. A postal from you today will do it.



Trade-Mark Registered U. S.  
and other countries.

**ACME MOTOR TRUCK CO.**

535 Mitchell Street  
Cadillac, Michigan

# ACME

"Acme Covers the Field of Trucking Needs With the Balanced Acme Line"

## Lavine Announces New Steering Gear

THE new model recently announced by the Lavine Gear Co., Milwaukee, Wis., differs in design from former models of Lavine make in that greater leverage is obtained when the front wheels of the vehicle are turned to the extreme right or left positions. This feature makes this gear especially adaptable for balloon tire equipment. Adjustment is provided for all lost motion in the steering wheel as well as the up and down motion of the worm shaft.

of this is apparent because as the trunnion shaft is turned in the extreme positions, the trunnion blocks are pulled outward from the center of the trunnion shaft, thus increasing the leverage.

By placing the trunnion pins in the sliding head the radial travel of the pins as in the former type of gears is eliminated and the pins travel in a lineal direction, thereby keeping the forces balanced.

The housing is made of malleable iron and is easily assembled or disassembled by removing four bolts. The trunnion shaft is placed directly in the center. When the trunnion shaft is in normal position the end play is taken up or the thrust is relieved by a recess in the housing against which surface the trunnion bears. A change has been made in the location of the ball thrust bearing as well as the size of the latter. Instead of the small bearing at the bottom of the housing a

large bearing has now been placed on top of the shoulder of the worm shaft. This bearing has 15 11/32 steel balls to take the thrust as well as remove the friction between the adjusting screw and the worm. The

worm is cut with right and left hand threads, crossing each other and running in two bearings known as the upper and lower bearings of the housing. The worm is made of 1045 S. A. E. steel heat treated and ground.

A feature of the trunnion blocks consists in making them with rounded surfaces where they engaged the slots in the trunnion. The advantage of this is that a universal ball joint action is secured which naturally offsets any disadvantages that might occur through misalignment.

There are three threads on the sliding heads and worm in mesh at all times. Owing to the large and equally distributed bearing surfaces, it is stated that this gear will not wear faster in the mid-position than it does on the extremes. Lubrication is effected by the action of the sliding heads which pumps the lubricant under pressure throughout the bearing surfaces.

The new steering gear is made in different sizes to meet the requirements of every type of motor vehicle, including motor buses.



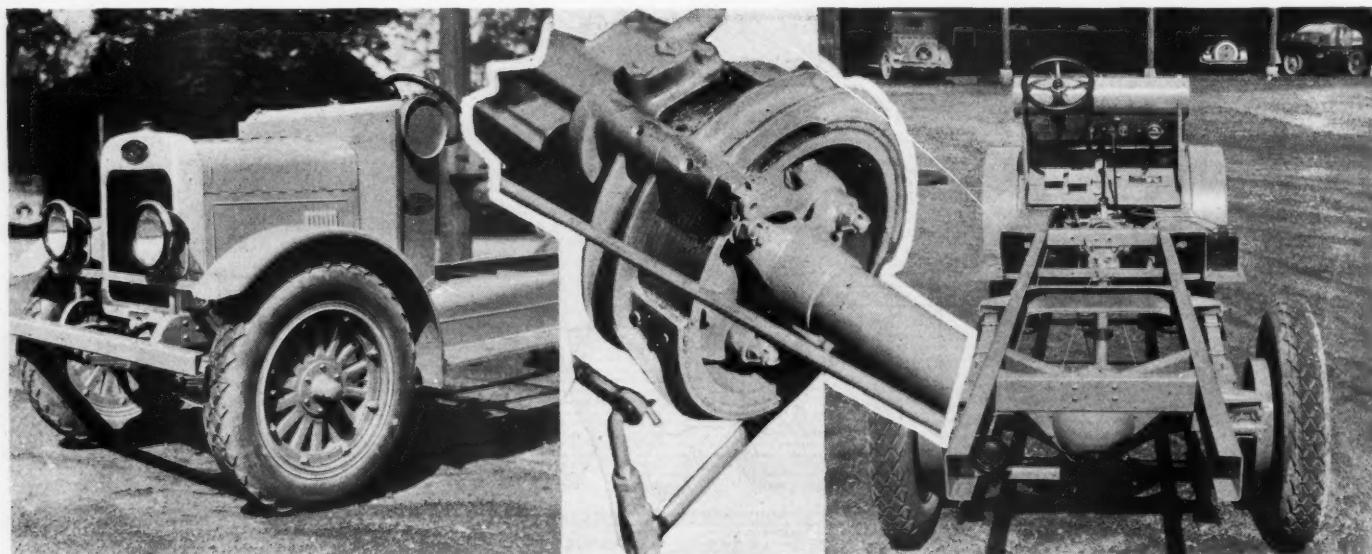
The New Lavine Gear Disassembled

The essential change in the new gear over the former model is that the pins supporting the trunnion blocks instead of being in the inner end of the trunnion shaft are now attached directly to each half of the sliding head. The advantage

### Bus Line Grows

The Conway Tours Company, operating a bus line between Boston and Providence has increased its schedule so that now it is making three trips a day between the two places instead of two. Later on this will be increased to four, as the patronage is growing.

**The Noyes-Buick Company**, distributors of the GMC line in New England, has just leased a large building on Commonwealth Avenue directly across the street from its big wholesale offices and has placed its retail truck sales company there. There is a large frontage on the avenue with a big service station in the rear.



Gramm-Bernstein Announces a New Heavy Duty Speed Truck

This model, which has recently been placed in production by Gramm-Bernstein Truck Corporation, of Lima, Ohio, is known as a heavy-duty speed truck. All units are exceptionally heavy in construction, especially the radiator, frame and rear axle. The propeller shaft brake in back of the transmission is a real, genuine shoe brake, with drum made of cast steel. A heavy-duty transmission is being used, such as is employed in two and two and a half ton trucks. The rear axle is claimed to be the heaviest speed truck type on the market today. Exceptional tire wear is claimed, due to the design of the chassis. This truck is known as Model 115, having a 3000-lb. maximum capacity. Detailed specifications of this job will be found in our Specification Tables.

*This advertisement will appear in the Saturday Evening Post, October 4th*

# New GARFORD REGENT SEDAN Pullman Car OF THE HIGHWAY



Garford engineers have created a type of bus that offers more comfort to passengers, more profit to operators and exceptional ease of operation to drivers.

The Garford Regent Sedan Six is low slung on long flexible springs. Wide spring centers on the rear axle reduce body sway.

The six-cylinder motor is the largest made for bus work. There is a reserve of power which never need be drawn upon. Handles like a pleasure car—smooth in operation, quick in pick-up, snappy in get-away.

Interior appointments are truly regal. Deep cushioned seats, ample leg room and an artistry in design and decoration new to public motor conveyances.

The Garford Regent Sedan Six comfortably accommodates thirty people.

In the rear is a commodious smoking compartment. Luggage is carried in a large loading well to the right of the chauffeur's cab.

Suitable for hotel, sightseeing, interurban or long haul service.

In the phenomenal growth of motor bus transportation, Garford has played a leading role. Through long experience, exhaustive surveys and the facilities of a large, modern factory, Garford is in a position to supply bus operators with the equipment best suited to their needs.

Through the Garford Bus Development Bureau a fund of valuable information is available. Direct inquiries on all questions pertaining to bus operation are invited.

Address  
BUS DEVELOPMENT BUREAU

## The Garford Regent Sedan Six

Also Made in Pay-Enter Type

*Passenger capacity—25-30.*

*Low chassis frame; 20½" from the ground. Overall length, 336". Overall height, 80". Extreme width, 90".*

*Body designed by bus specialists. All seats equipped with double deck springs and extra deep cushions; backs are tilted to assure comfort. Equipped with device to protect passengers against wind and rain. Deep section frame prevents body sagging—door binding.*

*Long wheelbase, 220", prevents excessive body overhang at rear of axle and affords a more efficient distribution of passenger load. Long flexible springs.*

*Wide spring centers on the rear axles reduce body sway. Six-cylinder engine, largest made for bus work. 105 horsepower, 4½" x 5½".*

*Steering gear outside of frame gives a large front loading well. Thorough accessibility to all units. Four-wheel hydraulic brakes, internal type; emergency brakes on rear wheels.*

## The GARFORD MOTOR TRUCK COMPANY, Lima, Ohio

Busses 15 to 35 Passengers

*Beginning in 1902 Garford is now among the eight companies manufacturing 78% of the bona-fide trucks*

Trucks 1 to 7½ Tons

BUILDING TODAY FOR TOMORROW'S REQUIREMENTS

## Six-Wheel Stages Giving One-Third Greater Tire Mileage

(Continued from page 30)

arm which extends across and through the chassis frame, supporting a spring on either end. With this arrangement the axle carrying the differential is always kept parallel to the car body. This re-

from collision damage, but affords a very desirable forward anchorage for the fenders.

A spare tire is carried on either side of the running board at the forward end, the front fenders being curved on short radius to allow the running board to extend as far forward as possible to keep the spare tires well forward.

A 30 gallon gasoline tank is mounted on the side of the frame and is filled through a spout just above the running



Showing Cast Aluminum Wheels, One With Felloe Band and One Without, Also the Attachment That Has Eliminated the Muffler on the California Transit Co. Stages.

mains true even when a chuck hole or an obstruction drops or raises one wheel as much as 12 in. from the plane of the three others. This is brought about by the arrangement of the two springs free to rotate about the rocker arms. With this arrangement of the rear end there is twice the braking area afforded by two wheels, there being no tendency to skid when brakes are applied suddenly in wet weather.

A transverse member of the frame at the front end is used as a bumper, which not only protects the shock absorbers

board on the driver's side. The battery is also carried on this side supported on the frame under a metal cover. Special provision for carrying baggage on the roof is provided. A pipe railing attached to the roof serves to hold the baggage in place. Down the center of the baggage space there is a pipe attached to the roof which is designed to hold a canvas which is thrown over the baggage and strapped down, thus keeping dust from the baggage. The two stages are equipped with General Cord tires.

ately to its dealer organization. It is an optional plan that is recommended to dealers for the purpose of building up business ahead, rather than waiting for the chance discovery of the prospect that is ready to buy.

By reason of the fact that the 6 per cent accumulation is lost if the certificate owner does not proceed with the car purchase, it is expected that the plan will be more successful than the usual one, in keeping the buyers in line. Similarly, by keeping salesmen and dealers working on future profits and commissions, rather than immediate ones, it is expected to aid in holding withdrawals in these ranks to low figures.

The credit features on service work and accessory sales has a two-fold aim. First to make repeat buyers of all present Chevrolet owners and, secondly, to bring all Chevrolets to authorized dealers and service stations for service work, thereby increasing the volume of parts business and service profits, and also increasing the volume of accessory sales.

As outlined by the company, the plan presents a means of offsetting depreciation on present cars in that it sets up credits from maintenance charges on the payment of a new car when the owner is ready to change over. By servicing the old car the dealer is in position to appraise it fairly and accurately when offered in trade on a new one. Furthermore it reduces the possibility of dealer losses through competitive bargaining on trades in that the buyer and dealer are established on friendly terms previous to the deal.

The plan differs too from the usual easy payment plans in that the dealer does the collecting and the keeping of accounts. He is therefore in touch with the buyer at all times and is in position to keep payments up to date. Money received on time payments is deposited in a separate trustee account by the dealer, so that no loss can visit the certificate holder through the administration of the general dealer business.

Purchasers under the time payment are further guaranteed against loss in any form in that the dealer and the bank in which the trustee account is to be kept are insured. The dealer before being permitted to operate under the plan must be passed upon by the insurance company designated by Chevrolet Motor Co. Following this he receives certificates and other office equipment incidental to applying the plan and nothing remains but to go out and sell it. The certificates cost the dealer \$1 each, this meeting the cost of insurance premium which is paid by the Chevrolet company and cost of printing. The other supplies including book-keeping equipment, sales, and stamp cost \$10.

## Chevrolet Announces New Purchasing Plan

Will Apply to All Chevrolet Models and Trucks

CHEVROLET Motor Co. is introducing a new car purchase plan, called The Chevrolet 6 per cent Purchase Certificate Plan, unique features of which are that it offers 6 per cent interest on the money deposited toward the payment of a car, and also, credits 6 per cent on all service work or accessory purchases, toward the purchase of a new car or truck.

In this way the sale of the certificates is opened up so that not only the non-car owner is a prospect, but also the present

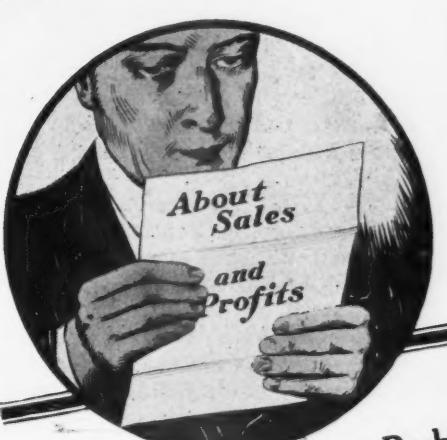
Chevrolet owner, as well as the present owner of any car whatsoever. The non-car owner is attracted by the 6 per cent interest feature. The Chevrolet owner by the credits of 6 per cent allowed on all service and repair work, and on any accessories he may purchase. The non-Chevrolet owner is attracted by the credits on accessory purchases, and such repair work as can be done on his make of car in Chevrolet shops.

The plan is copyrighted by the Chevrolet company and is being introduced immedi-

The Lang Body Company, of Cleveland, that build the Mack sedan body for the 230½ in. wheelbase bus chassis, is now rushing through an order for one hundred necessary to meet the rapidly increasing demand from all over the country for this de luxe type of body. This is understood to be the largest single order of its kind ever placed.

# Dealers!

**Facts every automobile dealer must face**



*And the Answer to Your Problem*

*if you handle cars or trucks you want this book*

**free!**

**Shows you how to increase your business!**

This is the most unusual piece of trade literature ever published. Points the way to BIGGER PROFITS and presents real facts about trade conditions that every dealer should know.

**SEND FOR YOUR COPY TODAY!**

**Ruggles Motor Truck Company**

**SAGINAW  
MICHIGAN**

# Our Job-

## is to Make Your Bus a Bigger Money-Earner

### No. 208 De Luxe

The very highest development in luxurious bus seating. Not approached by any other seat in comfort and convenience. Strong, light steel supports. Cushions with deep, flexible spring construction of special design, equally adapted to all passengers, light or heavy. Back ideally pitched and cushioned with soft, yielding springs that support the back in perfect comfort.



Through long experience we know your seating problems and exactly how to solve them. Our forty years' experience with vehicle seats enables us to add many touches of refinement and comfort that might otherwise be overlooked. All past experience is marshaled to solve the one big problem—*how to make your bus a bigger money-maker*.

**SPACE SAVING.** By scientific design and a patented Hale-Kilburn Space-Saving Feature,  $1\frac{1}{2}$ -inch knee room is gained at every seat without loss of seating capacity, and passenger comfort is provided at no additional cost.

**TRIUMPH.** With their drawn steel pedestals and steel framework, their springs and upholstering of the most serviceable materials to be found, Hale-Kilburn Seats stand the wear and tear of the roughest roads in a marvelous way.

**FOR EVERY TYPE OF BUS.** From the big De Luxe Buses down to the small school or factory bus, from the big trans-continental touristers to the small short-tripper, *there is a Hale-Kilburn Seat to meet the need*. Upholsterings in leather, rattan or imitation leather.

*Write for Full Information*

### HALE-KILBURN COMPANY

General Offices and Works  
PHILADELPHIA, PA.

#### *Sales Offices:*

Hale-Kilburn Co., 30 Church St., New York.  
Hale-Kilburn Co., McCormick Bldg., Chicago.  
E. A. Thornwell, Candler Bldg., Atlanta, Ga.  
Frank F. Bodler, 902 Monadnock Bldg., San Francisco.  
Chris. Eccles, 320 S. San Pedro St., Los Angeles.  
T. C. Coleman & Son, Starks Bldg., Louisville.  
W. L. Jefferies, Jr., Mutual Bldg., Richmond.  
W. D. Jenkins, Praetorian Bldg., Houston, Tex.  
H. M. Euler, 40 Front St., Portland, Ore.

# HALE-KILBURN SEATS

# The Efficiency and Upkeep Economy of Fuller Transmissions Make Them Especially Valuable for Bus Service

## Fuller GU-14 Standard Bus Transmission

### Gear Ratios:

Direct	1	}	For buses in city or country service with average and high speed rear axle ratios.
Third	1.6		
Second	3		
First	4.8		
Reverse	6.5		

## Fuller GU-14 Overgeared Bus Transmission

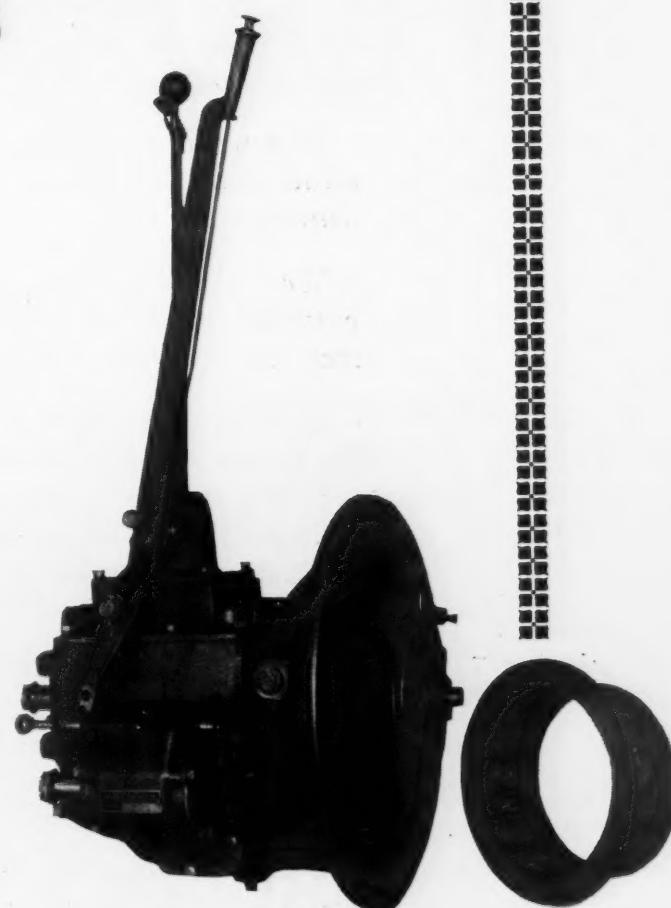
### Gear Ratios:

.685 or 46% overdrive	}	For country service with average axle ratios where more speed is desired than can be obtained with direct-drive transmission and high-speed axle.
1 Direct		
1.87 Intermediate		
3.03 Low		
4.1 Reverse		

Both models have most parts in common and are fully interchangeable in the bus. Fourteen facing gear tooth type multiple disc clutches have extra wide friction facings of very dense weave.

All shafts are mounted on Tinker-proof Annular Ball Bearings, which are more nearly free from wear than any other known type of bearing. They continuously hold the gears in perfect alignment, thus maintaining the initial quietness of the gears and prolonging their life.

**FULLER & SONS MFG. CO.**  
KALAMAZOO MICHIGAN



# FULLER TRANSMISSIONS

# Every Motor Bus Manufacturer Should be Vitally Interested in the Shuler Motor Bus Front Axle

Shuler experienced engineers and skilled mechanics have concentrated their efforts from the beginning upon the development and perfection of only one vital major unit—the front axle.

—In entering any field of front axle service, we have studied the requirements of that service and have specialized in design to meet those particular demands.

—We realized from the start that the kind of front axle built for ordinary passenger car or motor truck use would not and could not be expected to meet the exacting and severe demands of motor bus service.

—In this special motor bus design, we have built a front axle which places the spring pad full seven inches nearer the ground and insures maximum convenience in loading and unloading because of the low step and the low, wide body floor. It provides an extremely low center of gravity, while retaining ample road clearance. It will stand up under motor bus service, gives maximum efficiency in operation, and assures the utmost in safety for the bus itself and for the operator and passengers.

*Write for further information about the superior service which the Shuler motor bus front axle provides. Our engineering staff will give you the fullest kind of co-operation to develop the highest degree of efficiency in your installation of Shuler Front Axles.*

**SHULER AXLE CO., Incorporated**  
3003 Jones Street LOUISVILLE, KY., U. S. A.





**The Heil Co.:** "How do you like your Heil Dumps?"

**Mr. Geo. F. Keller:** "I have used your Heil Hoists for over one year on my fleet of ten Sterling Dump trucks and have found them to be very satisfactory. I have recently purchased two more Sterling trucks and have again specified your hoists. From now on I shall specify Heil Hydro Hoists wherever possible."

## *A Big Fleet Owner's Endorsement Means Much*

THE words of Mr. Keller, taken from a recent letter, are certainly a powerful endorsement for Heil Quality equipment. Mr. Keller is a well-known Coal and Building Supply Dealer of Riverside, Illinois. You will also find that after your first Heil job, the Quality and Service of Heil Hoists and Bodies sells itself regardless of difficult hauling conditions. It's got to be a mighty good dump job to merit a fleet user's recommendation such as Mr. Geo. Keller's.

Dealers and Owners alike are greatly interested in the new light weight No. 3 Heil Hoist which has just been put on the market for 1½ to 2 ton trucks of every make and model. Write Heil today for further information and prices on this new Hoist.

Coal Dealers want to know more about the Heil Hydro Hi-Lift. It represents the most modern and up-to-date equipment for city coal delivery. Bulletin No. 139 will tell you about it.

[ Please don't hesitate to consult our engineers on any dump truck problem you may have. It's a pleasure for Heil to serve you. ]

# THE HEIL CO.

1143 MONTANA AVE.

MILWAUKEE, WIS.



Largest Manufacturer of Bodies,  
Hoists and Tanks



One of Our Twenty-five Distributors is Near You



# Opportunities for Truck Sales TO Counties and Municipalities

City and County officials in buying Motor Trucks purchase with the expectation that the units selected will give the maximum return in transportation—not only for the original outlay, but for the money expended in operation and maintenance.

They necessarily must insist on full value for the taxpayers' money.

SERVICE Motor Trucks have a proven record of dependable and economical operation in County and Municipal work. This is further attested by the large number of cities, counties, and townships that have operated fleets and single SERVICE units for years.

## IN INDIANA, FOR INSTANCE

The following cities and counties in Indiana alone are using from one to a half dozen or more SERVICE Motor Trucks.

### COUNTIES

Clay	Pulaski	Decatur
Owen	Wabash	Huntington
Boone	Fulton	Johnston
Cass	Warren	Monroe
Porter	Dubois	Tippecanoe
Tipton		

### MUNICIPALITIES

Indianapolis	Berne
Kokomo	Wabash
Logansport	Monticello
North Manchester	Anderson
Valparaiso	Notre Dame

Write us for particulars regarding the SERVICE franchise, and the record SERVICE Trucks have made in the municipal and county fields.

SERVICE Trucks, backed by adequate resources and manufacturing facilities, real sales co-operation, prompt and accurate parts service and close personal relationship between dealer and factory, combine to make the SERVICE franchise one of inestimable value to any automotive distributor.

## The Service Caravan

Is now operating in Pennsylvania. Write us if interested in showing the CARAVAN to your prospects.

# SERVICE MOTORS, Incorporated Wabash, Indiana

A complete line 1 1/4, 1 1/2,  
2, 3, 4 and 6 ton  
capacities

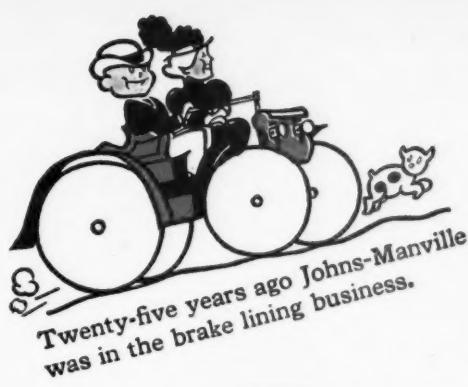
**Service**  
MOTOR TRUCKS

Special Contractors' and  
Bus Chassis

WITH THE RED PYRAMID

ON THE RADIATOR





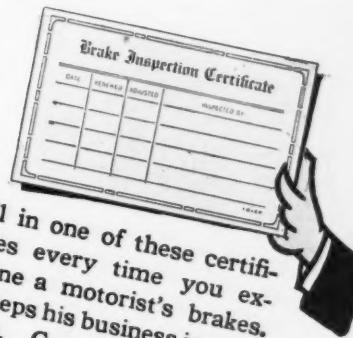
There are two ways to China but only one way to make good brake lining. Use only best long-fibred asbestos as Johns-Manville does.



It's cheaper to stop with Johns-Manville Asbestos Brake Lining.



Fill in one of these certificates every time you examine a motorist's brakes. It keeps his business in your shop. Get a supply from your distributor.



In many American cities brake inspection is a law. Keep your customers out of trouble with Johns-Manville Asbestos Brake Lining.



Going or coming! A Johns-Manville Flange Sign gets the motorist's eye both ways because its arresting message is printed on both sides.



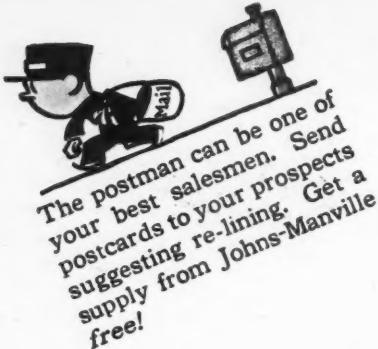
You can talk Brake Lining to hundreds of prospects in your local newspaper. Johns-Manville will furnish cuts and copy free.



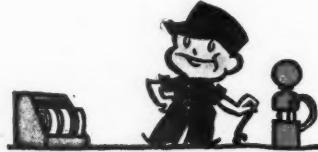
A few turns of the wrench or relining? Regular brake inspection will keep their brakes efficient.



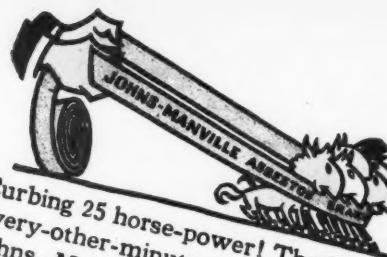
The Johns - Manville Flange Sign reminds 'em of their brakes.



The postman can be one of your best salesmen. Send postcards to your prospects suggesting re-lining. Get a supply from Johns-Manville free!



Another salesman — your mechanic. He can get lots of profitable relining business by examining brakes of cars that pass through his hands with other ailments.



Curbing 25 horse-power! That's the every-other-minute performance of Johns-Manville Brake Lining in stopping the average car in traffic.



The blow torch test will prove to motorists how heat-resisting Johns-Manville Brake Lining is. Give a demonstration in your window.



Johns-Manville Seigelite Sheet Packing resists the action of oil, water and gasoline through years of usefulness.

ASBESTOS

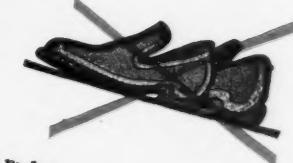


Good tape like good honey is sticky.  
That's Johns-Manville Automobile  
Tape—sticky always.

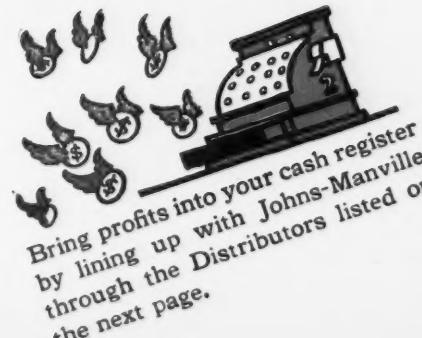


What a grip! Johns-  
Manville Clutch Facings  
are both woven and pressed  
to fit disc clutches of all  
standard American cars.

JOHNS-MANVILLE

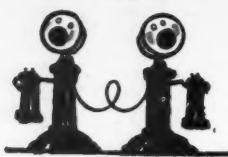


No rubber allowed in Johns-  
Manville Jewett Rings. For  
use wherever a ring of small  
cross-section is required—  
particularly adapted for water-  
pump shafts.

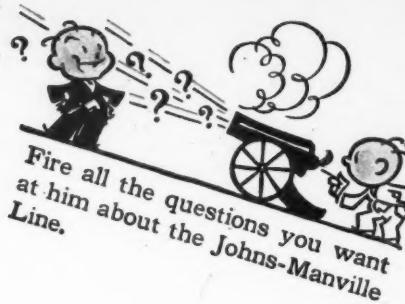


Bring profits into your cash register  
by lining up with Johns-Manville  
through the Distributors listed on  
the next page.

Choose Your  
Distributor  
from this Page



Get connected with  
the nearest one.



Fire all the questions you want  
at him about the Johns-Manville  
Line.

**Alabama**  
Moore-Handley Hardware Co.,  
Birmingham  
Johnson Tire & Auto Co., Montgomery

**Arkansas**  
Fort Smith Automotive Supply Co.,  
Fort Smith  
Crow-Burlingame Co., Little Rock

**California**  
Chanslor & Lyon Co., Fresno  
The Banta Company, Los Angeles  
Chanslor & Lyon Co., Los Angeles  
Featherstone, E. A., Los Angeles  
McCoy Motor Supply Co., Los Angeles  
Chanslor & Lyon Co., Oakland  
Weinstock-Nichols Co., Oakland  
Kimball-Upsom Co., Sacramento  
P. W. Gavin Company, San Diego  
Chanslor & Lyon Co., San Francisco  
McCoy Motor Supply Co., San Francisco  
Weinstock-Nichols Co., San Francisco  
California Auto Supply Co., Stockton

**Colorado**  
Auto Equipment Co., Denver  
Foster Auto Supply Co., Denver  
Motor Accessories & Tire Co., Pueblo

**Connecticut**  
Hessel & Hoppen Co., New Haven  
Motor Tire Service Co., Putnam

**District of Columbia**  
National Electrical Supply Co.,  
Rubel, Chas., & Co.

**Florida**  
Baughman Company, G. Norman,  
Jacksonville  
Baughman Company, G. Norman, Miami  
Baughman Company, G. Norman, Tampa

**Georgia**  
The Frank Corporation, Savannah

**Illinois**  
Chicago Automobile Supply House,  
Chicago  
Motor Car Supply Co., Chicago  
Sheridan Auto Supply Co., Chicago  
Tenk Hardware Co., Quincy  
Washington Auto Supply Co., Washington

**Indiana**  
Orr Iron Co., Evansville  
Lomont & Co., Ft. Wayne  
The I. J. Cooper Rubber Co., Indianapolis  
Goodlin Auto Equip. Co., South Bend

**Iowa**  
Cedar Rapids Auto Supply Co., Cedar  
Rapids  
Sieg Co., Davenport  
Herring Motor Co., Des Moines  
Repass Auto Co., Waterloo

**Kansas**  
The Weldon Motor Supply Co., Salina  
Southwick Auto Supply Co., Topeka  
The Massey Hardware Company, Wichita

**Kentucky**  
O. W. Murphy Co., Inc., Lexington  
Peaslee-Gaumer Co., Louisville

**Louisiana**  
Borden-Acklen Auto Supply Co., Inc.,  
New Orleans  
Interstate Electric Co., Shreveport

**Maine**  
The Farrar-Brown Company, Inc.,  
Portland

**Maryland**  
Auto Supply Co., Baltimore  
Coggins & Owens, Baltimore

**Massachusetts**  
Linscott Supply Co., Boston  
Motor Tire Service Co., Fitchburg  
Duncan & Goodell Co., Worcester  
Motor Tire Service Co., Worcester

**Michigan**  
E. A. Bowman, Inc., Detroit  
Cumming Bros., Flint  
Tisch Auto Supply Co., Grand Rapids

**Minnesota**  
Kelley-Duluth Co., Duluth  
Minneapolis Iron Store Co., Minneapolis  
Reinhard Bros. Co., Minneapolis  
Nicola, Dean & Gregg, St. Paul

**Missouri**  
Joplin Supply Co., Joplin  
The Faeth Company, Kansas City

**Missouri (cont'd)**  
Ayers Auto Supply Co., St. Joseph  
Beck & Corbitt Iron Co., St. Louis  
Fred Campbell Auto Supply Co., St. Louis  
Geller, Ward & Hasner, St. Louis  
Ozark Motor & Supply Co., Springfield

**Montana**  
Northwestern Auto Supply Co., Billings

**Nebraska**  
Nebraska Buick Auto Co., Lincoln  
Nebraska Buick Auto Co., Omaha  
Storz-Western Auto Supply Co., Omaha

**Nevada**  
Nevada Auto Supply Co., Reno

**New Hampshire**  
Thompson & Hoague Company, Concord

**New Jersey**  
Economy Auto Supply Co., Newark  
Pruden Hardware Co., Newark

**New York**  
Albany Hardware & Iron Co., Albany  
Martin-Evans Co., Brooklyn  
H. D. Taylor Co., Buffalo  
Morrow Distributing Corp., Elmira  
Weaver-Ebbling Automobile Co., N. Y. C.  
Pruden Hardware Co., W. E., N. Y. C.  
Whitemore-Slim Co., Inc., N. Y. C.  
The Olmsted Co., Inc., Syracuse

**North Carolina**  
Carolina Auto Supply House, Charlotte  
Glasgow-Stewart & Company, Charlotte  
Automobile Supply Co., Wilmington

**North Dakota**  
Grant-Dadey Company, Fargo

**Ohio**  
The Penn, Rubber & Supply Co., Akron  
C. & D. Auto Supply Co., Cincinnati  
The I. J. Cooper Rubber Co., Cincinnati  
The Penn, Rubber & Supply Co., Cincinnati  
The Penn, Rubber & Supply Co., Cleveland  
The I. J. Cooper Rubber Co., Columbus  
The Penn, Rubber & Supply Co., Columbus  
The Penn, Rubber & Supply Co., Dayton  
The Penn, Rubber & Supply Co., Toledo  
The Penn, Rubber & Supply Co.,  
Youngstown

**Oklahoma**  
Severin Tire & Supply Co., Oklahoma City  
Severin & Company, Tulsa  
Machinery & Supply Co., Tulsa

**Oregon**  
Wiggins Company, Inc., Portland  
Chanslor & Lyon Co., Portland

**Pennsylvania**  
Motor Accessories Co., Allentown  
Central Supply Co., Altoona  
The Penn, Rubber & Supply Co., Erie  
Front Market Motor Supply Co.,  
Harrisburg

**Rhode Island**  
General Auto Supply Co., Harrisburg  
Johnstown Auto Co., Johnstown  
General Auto Supply Co., Lancaster

**South Carolina**  
The Penn, Rubber & Supply Co., Oil City  
Berrodin Auto Supply Co., Philadelphia  
Gaul, Derr & Shearer Co., Philadelphia  
Roberts Electric Supply Co., H. C., Phila.  
Dyke Motor Supply Co., Pittsburgh  
Jackson Motor Supply Co., Pittsburgh  
American Auto Supply Co., Inc., Scranton  
General Auto Supply Co., York

**Tennessee**  
Belcher & Loomis Hardware Co.,  
Providence

**Texas**  
Ferris-Dunlap Co., Dallas  
Hans Johnson, Dallas  
Tri-State Motor Company, Inc., El Paso  
The Equipment Co. of Texas, Fort Worth  
Meyer Co., Jos. F., Houston  
The Southern Equipment Co., San Antonio  
McCauley-Ward Motor Supply Co., Waco

**Utah**  
Inter-Mountain Electric Co.,  
Salt Lake City  
Motor Mercantile Co., Salt Lake City

**Vermont**  
Vermont Hardware Co., Burlington

**Virginia**  
The Owens-Merritt Co., Danville

Piedmont Hardware Co., Danville

Crump Co., Benj. T., Richmond

Meadow-Price Co., Roanoke

**Washington**  
Chanslor & Lyon Co., Seattle

Reynolds & Reynolds, Seattle

Chanslor & Lyon Co., Spokane

Holley-Mason Hardware Co.,  
Spokane

Chanslor & Lyon Co., Tacoma

Reynolds & Reynolds, Tacoma

**West Virginia**  
Williams Hardware Co., Clarksburg

**Wisconsin**  
Clemens Auto Supply Co., Eau Claire  
Andrae & Sons Co., Julius  
Milwaukee  
Shadwell & Boyd Iron Co.,  
Milwaukee  
Tisch Auto Supply Co., Milwaukee  
Western Motor Supply Co.,  
Milwaukee

**Wyoming**  
Auto Equipment Co., Casper

**Alberta**  
CANADA

The Motor Car Supply Co.,  
of Canada, Ltd., Calgary  
The Motor Car Supply Co.,  
of Canada, Ltd., Edmonton

**British Columbia**  
Marshall-Wells, B. C., Ltd., Vancouver

**Manitoba**  
Wood, Vallance, Ltd., Winnipeg

**New Brunswick**  
The Lounsbury Co., Ltd., Moncton

**Nova Scotia**  
J. J. Snook, Ltd., Truro

**Ontario**  
A. Chown & Co., Ltd., Kingston  
A. Workman & Co., Ltd., Ottawa  
Hyslop Brothers, Ltd., Toronto  
Johnston-Deane, Ltd., Toronto  
Samuel Trees & Co., Ltd., Toronto  
Bowman-Anthony Co., Windsor

**Quebec**  
J. S. Mitchell & Co., Ltd., Sherbrooke

**Saskatchewan**  
Wood, Vallance, Ltd., Regina

**FOREIGN**

Carlos Goffre & Co., Buenos Aires

**Australia**  
Duncan & Co., Pty., Ltd., Melbourne  
Cornell, Ltd., Adelaide  
Canada Cycle & Motor Agency,  
(Queensland, Ltd.), Brisbane  
Hyslop, Lloyd & Co., Sydney

**China**  
The Koster Company, Shanghai

**Denmark**  
F. Bulow & Co., Copenhagen

**Great Britain and Ireland**  
A. C. R. Greene & Co., Ltd., London

**Japan and Korea**  
Takemura Company, Yokohama

**Jugo-Slavia**  
William H. Smyth, Belgrade

**Mexico**  
Mexico Auto Supply Co., Mexico City

**New Zealand**  
Jas. J. Niven & Co., Ltd., Wellington

**Spain**  
Luis R. Villamil, Madrid

**Sweden**  
A. B. Stern & Stern, Stockholm

**Switzerland**  
K. Bissigge Firm, Zurich

**Union of South Africa**  
Bartle & Co., Ltd., Johannesburg

**Uruguay**  
Clericetti & Barrella, Montevideo

JOHNS-MANVILLE INC., 292 MADISON AVENUE AT 41ST STREET, NEW YORK CITY  
Branches in 62 Large Cities. For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

Printed in U. S. A.

# TIMKEN

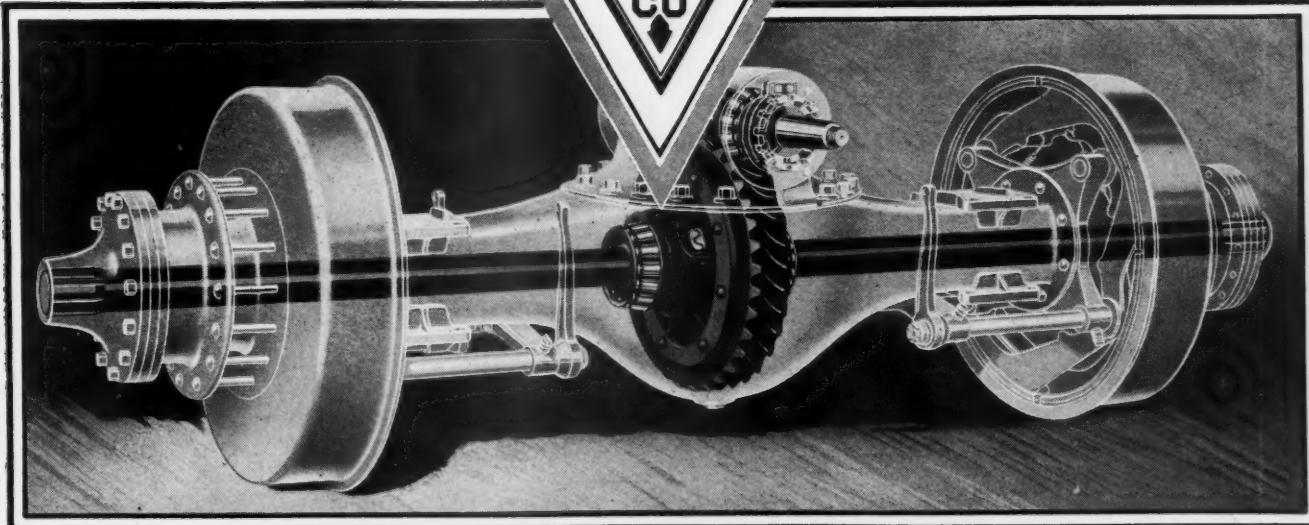
## Oil is the Axle's Life-Blood

What clean, rich blood is to a living being, a continuous circulation of good, clean oil is to a rear axle.

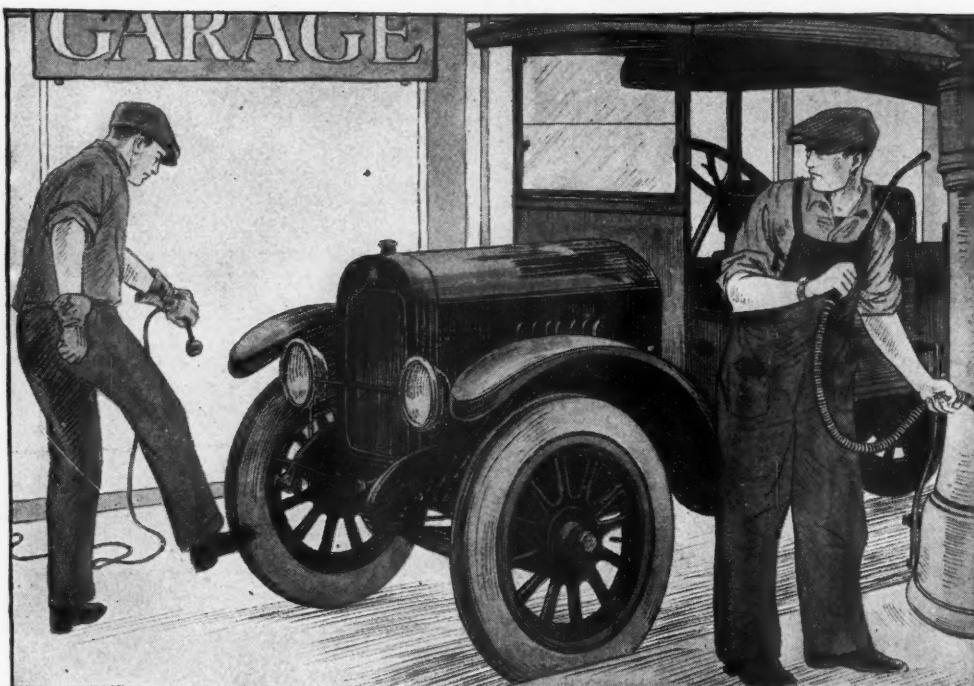
Timken-Detroit Worm Drive construction keeps the oil flowing and keeps the dirt, dust and grit out.

Therefore, be sure you use the *right* oil—it's all you have to do to get continuous, economical operation with a Timken Worm-Drive Axle.

THE TIMKEN-DETROIT  
AXLE COMPANY  
Detroit, Michigan



# AXLES



## Stop his guesses— and pocket a profit

This driver watches his gasoline gauge carefully. But he *kicks* his tires to see if they need air. That's your chance to sell a Schrader Truck Tire Gauge.

Guessing about air pressure is a habit which you can easily change—and at a profit. It takes but a word or two to sell a Schrader Tire Gauge. Every truck driver who stops for supplies is a possible buyer.

The Schrader Truck Tire Gauge registers air pressure in any size pneumatic truck tire. It is easy to use and lasts for years.

Order a stock of Schrader Truck Tire Gauges from your supply house. Then show this special truck tire gauge to every truck driver who stops for gas or air. You will serve his best interests and boost your own profits.

A. SCHRADER'S SON, Inc., Brooklyn, N. Y.  
CHICAGO TORONTO LONDON

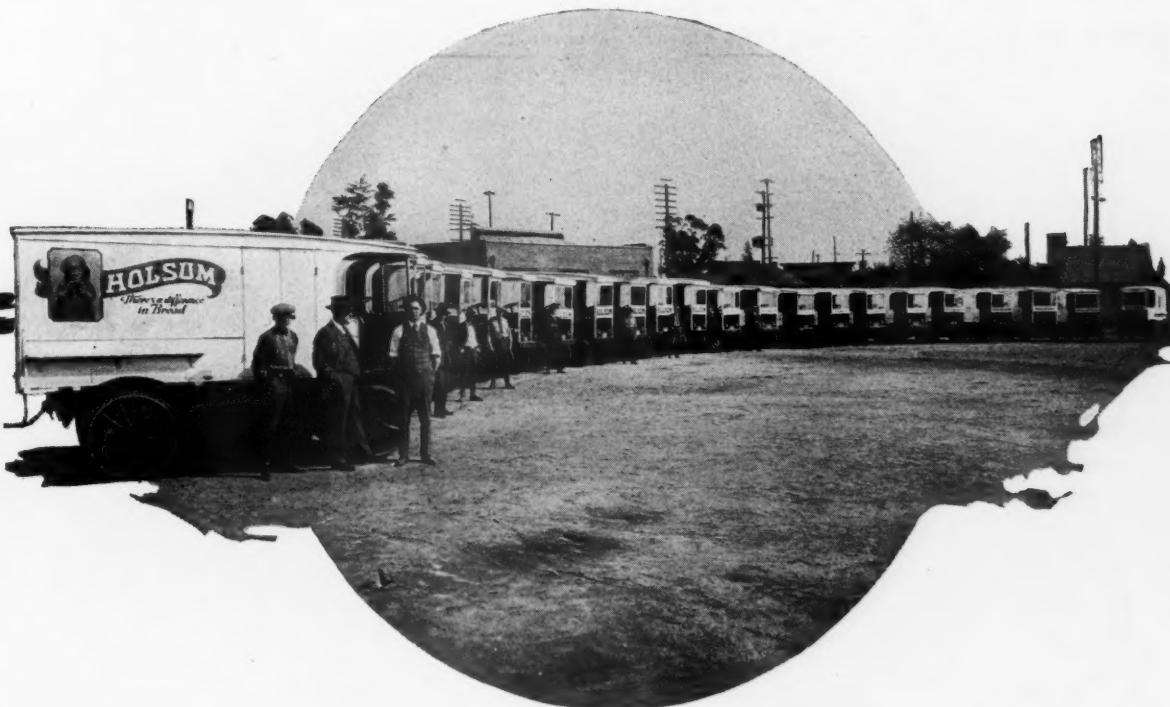


This truck tire gauge with angle foot is calibrated in 5 lb. units from 30 to 170 lbs. It can be used on all types of wheels.

# Schrader

Makers of Pneumatic Valves Since 1844

## Tire Valves • Tire Gauges



## This A B C List

is representative of the HUNDREDS of leading American companies who have invested MILLIONS in Walker Electric Trucks and have made millions in profits by their use. The reputation of Walkers as the most dependable trucks for city route deliveries and short haul trucking is established by the company they keep.

<b>American Railway Express Co.</b> U. S. A.	<b>Marshall Field &amp; Co.</b> Chicago
<b>Beech-Nut Packing Co.</b> New York	<b>National Biscuit Co.</b> U. S. A.
<b>Commonwealth Edison Co.</b> Chicago	<b>Old Homestead Bakery</b> San Francisco
<b>Dommerich, L. F. &amp; Co.</b> New York	<b>Pacific Baking Co.</b> Los Angeles
<b>Eastman Kodak Co.</b> Rochester	<b>Quality Wet Wash</b> Chicago
<b>Fleishmann The, Co.</b> New York	<b>Reid, Murdock &amp; Co.</b> Chicago
<b>Gimbel Bros.</b> New York	<b>Stahl's, Otto, Inc.</b> New York
<b>Hoefer Ice Cream Co.</b> Buffalo	<b>Tide Water Oil Co.</b> Boston
<b>International Dairy Co.</b> Chicago	<b>United States Government</b> U. S. A.
<b>Jackson Express &amp; Van Co.</b> Chicago	<b>Vacuum Oil Co.</b> Chicago & New York
<b>Kingan &amp; Co.</b> U. S. A.	<b>Westcott Express Co.</b> New York
<b>Lever Brothers</b> Boston	<b>Zipprich Teaming Co.</b> Chicago

*Before you buy more trucks investigate the Walker-leading Electric. Ask the users in your own field*

**WALKER VEHICLE COMPANY • Chicago**  
LEADING MANUFACTURER OF ELECTRIC STREET TRUCKS

Branches:

NEW YORK  
BUFFALO

BOSTON  
BIRMINGHAM

PHILADELPHIA

Dealers in Other Principal Cities

Load Capacities:  $\frac{1}{2}$ — $\frac{3}{4}$ —1—2— $3\frac{1}{2}$ —5 tons

# WALKER ELECTRIC TRUCKS

LOWEST TRUCKING COST ON CITY ROUTES



# **"Our Pneumatics Average 20,000 Miles on 32 Buses"**

“Independent Touring Car Line,  
“Asheville, N. C., June 20, 1924.

"Dear Sirs: We use Firestone Gum-Dipped Pneumatics because we can get more miles for our money and better service than from any other tire that we have ever used," writes J. H. Paston, of the Independent Touring Car Line, Asheville, North Carolina.

"We find that our pneumatics average 20,000 miles per tire, which we consider especially good in view of the fact that our 32 buses travel in a difficult mountain territory." Yours very truly,

J. H. PASTON,  
Independent Touring Car Line.

Only Gum-Dipped construction by experienced Firestone engineers brings forth such statements as that of the Independent Touring Car Line of Ashville, N. C. Letters from every section of the country prove Firestone Pneumatic Truck Tires stand up in the hardest hauling jobs because of the extra strength in the Gum-Dipped Cords.

Gum-Dipping—the special Firestone process of rubberizing each fiber of each cord—practically eliminates destructive friction and makes the tire structure tougher and sturdier.

Ask your local Firestone Service Dealer about Pneumatic Truck Tires for bus equipment.



# Firestone



# The Will Solid Tire Adapter FOR MOTOR TRUCKS

*Reduce your motor truck tire costs with  
these adapters which allow the use  
of solid or pneumatic tires*

## Without Changing Wheels



### *Light in Weight*

The Will Adapter is hollow cast, properly ribbed for strength. Both inner and outer surfaces are machined accurately to S. A. E. dimensions.

### *Less Unsprung Weight*

The 40-in. Adapter with standard pneumatic tire wheel and fittings, weighs approximately 35 lbs. less than the 40-in. solid tire steel wheel.

Apply the Solid or Pneumatic Tires on Your Present Wheels

## All Sizes to Fit All Standard Pneumatic Tire Wheels Quickly Interchangeable

The Will Adapter is the only rigid application to the standard pneumatic wheel which makes possible the use of pneumatic tires or the replacement of solid tires without removing wheels or delaying operation of truck.

### *They Insure the Continuous Use of Your Truck Equipment*

Less than thirty minutes are required to change from one tire equipment to the other

### **Gear Ratio, Speed and Road Clearance**

In changing from Pneumatic Tires to Solid Tires the Gear Ratio, Speed and Road Clearance of the Motor Truck on Pneumatic Tires are not changed, as Will's Adapters permit the Use of Solid Tires having the same diameter as the Pneumatic Tires.

Don't "rut cut" pneumatic tires on frozen roads or have "blow-outs" in hot weather when solid tires may be applied so quickly.

Use the tire best suited to road conditions

**TIRE AND  
TRUCK DEALERS  
WANTED  
AS  
DISTRIBUTORS**

**Equip Your Present Motor Truck Now and Specify Will's  
Adapters on Your Next Purchase of Motor  
Truck Equipment**

MANUFACTURED EXCLUSIVELY BY  
**WILCOX TRUX, INC., MINNEAPOLIS, U.S.A.**

**SPECIAL  
PRICES  
TO  
FLEET  
OWNERS**

**Heavy Duty Cords remove uncertainty of pneumatic service from commercial cars..** This is not a courageous assertion, but a fact, a fact which is a matter of record, many records . . . For the good of your business, read carefully what users of Heavy Duty Cords have to say concerning their performance in trying circumstances and conditions. . . . Note how they save on up-keep, and add to working capacity . . . The reason is Heavy Duty Cords are built for buses and all commercial cars, and it comes out in performance.



# Goodrich Heavy-Duty CORD

**Testimony that proves  
the case of Heavy  
Duty Cords**

**Big Figure Mileage . . . . .**

"On a bus line running between Las Cruces and El Paso . . . Exceptional mileage when you consider the weight carried, and length of time in service . . . Of ten original tires, seven are still in service . . . One tire 40,000 miles, the other two close to 60,000 . . . . These buses make 200 to 225 miles per day" . . . International Bus Line, Las Cruces, N. Mex.

\*\*\*

**Outstanding Oilfield Service . . .**

"This tire has solved the heavy expense of the past operation . . . Opportunity to observe results from Heavy Duty Cords in actual heavy oil field service . . . Has no equal in the pneumatic truck tire field . . . Several of largest oil companies in Wichita field have adopted this tire after tests . . . Kent Bros. & Co., Wichita Falls, Tex.

\*\*\*

**Shows No Wear After 10,000 Miles . . . . .** "This truck has seen practically 10,000 miles of hard service over every road condition . . . We were surprised to find these tires showed practically no wear, the tread being in perfect condition . . . We feel that we can not say too much for the tire, and the service of the company behind it" . . . Johnson High Test Oil Company, Freeport, Ill.

\*\*\*

**Dealer Vouches for Heavy Duty Cords . . . . .** "I have never had a Heavy Duty Cord come-back . . . The mileage runs all the way from 10,000 to 20,000 miles . . . Knew of one Heavy Duty which made trip to Coast and back, but two competitive tires failed to stand the hard usage of trip" . . . Taylor Tire Shop, Madison, Wisc.

\*\*\*

**Hard to Equal . . . . .**

"The Heavy Duty Cord I am about to replace has seen twenty-one months' service . . . I can safely say that it has averaged 2,000 miles per month, and has been flat once . . . From my observation of pneumatic transportation, Goodrich Tires are hard to equal in mileage and efficiency . . . Inter-City Motor Express Company, Ft. Dodge, Iowa.

\*\*\*

To round out economical and efficient service in the operation of Trucks and Buses, Goodrich also provides the famous De Luxe Solid in Smooth and Tractor Types, and Goodrich Semi-Pneumatics.

THE B. F. GOODRICH RUBBER CO.  
Akron, Ohio

In Canada: The B. F. Goodrich Rubber Company, Ltd., Toronto

"BEST IN THE LONG RUN"

# In New York

Mr. Eugene P. Herrman of the Herrman Motor Truck Company, 607 W. 57th Street, has been selling Stewart trucks for eight years.

"The Stewart is the truck to sell if one wants to build a steady, growing truck business", says Mr. Herrman. "When you sell a man his first Stewart you know it will mean a repeat sale for you, because Stewarts cost less to run and keep free from unnecessary repair bills."

Eighty per cent of Stewart shipments go to dealers who have had the Stewart franchise from 6 to 10 years. Isn't this the time to know what the profitable Stewart franchise will do for you?

---

#### CHASSIS PRICES—Freight and Tax Extra

1 Ton Speed Truck, \$1195	1½ Ton Speed Truck, \$1595	2 Ton, \$1970
2½-3 Ton, \$2690	3½-4 Ton, \$3540	

BODIES FOR EVERY BUSINESS

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#### STEWART MOTOR CORPORATION

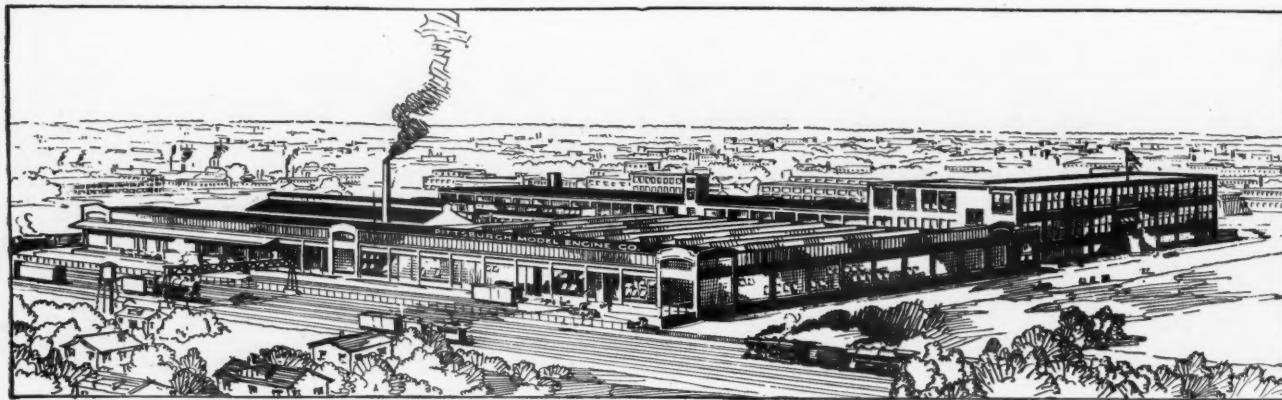
Incorporated 1912

BUFFALO, N. Y.



#### Part of the New York City Stewart Fleet

The Stewart Fleet operated by the City of New York has grown from five to thirty, as the economic value of Stewart trucks has become increasingly evident from year to year.



Area 225,000 Square Feet—Floor Space 162,500 Square Feet

# FOR SALE at a Bargain this Modern Industrial Plant

## *Location*

The buildings are located along the main line of the Pennsylvania Railroad at Homewood Station, Pittsburgh, Pa., the best location for a modern industrial plant in the entire city of Pittsburgh.

## *Plant and Facilities*

A group of four modern fireproof structures of brick, steel and concrete construction. Steel sash windows and saw-tooth roof construction provide maximum light and ventilation. Equipped with modern plumbing, excellent heating and lighting facilities, building elevators, sprinkler system, etc. Splendid loading platforms and railroad sidings to accommodate seven cars.

## *Raw Material*

The plant is situated in the heart of the iron, steel, glass and electrical industries. The low cost of receiving raw materials is an outstanding reason for Pittsburgh's industrial supremacy.

## *Freight Rates*

Pittsburgh's railroads reach 73% of all cities over 50,000 people (half the nation's population). Major trunk lines reach out in all directions. A study of freight rates reveals many interesting economies.

## *Labor Conditions*

Both male and female workers are obtainable at fair wages. Housing and transportation conditions are unusually excellent, and many of Pittsburgh's industrial workers are proud owners of their own homes.

## *Important Features*

Maximum of unobstructed floor space. Strong, permanent and good-looking buildings. Lighting, heating, ventilating and draining facilities are the best.

## *For Full Information*

Plant is priced at a bargain to effect quick sale. First mortgage of fair size will be taken, amount depending upon nature of business. Send for full information and booklet describing these buildings in detail. No obligation whatsoever.

## A Few Products That Can Be Made at This Plant

**Gas Engines — Tools — Machinery — Electrical Equipment — Drilling Supplies  
Mine Equipment — Hardware — Excavation Machinery — Bolts and Nuts — Presses  
Lathes — Forgings — Enameled Products — Conduits — Automobile Bodies — Steel  
Office Equipment — Chains — Household Products — Printing and Publishing, etc.**

Address all Inquiries to

**Pittsburgh Model Engine Company**

**1120 FRICK BUILDING**

**PITTSBURGH, PENNA.**



## The Best Body for Heavy Service

WHEN the Brown Body Corporation of Cleveland, Ohio, built the fine looking Body illustrated above, they knew that *ability to withstand hard usage* and *absolute protection for the load* were two features that the Owner would demand in the Body of this van.

To make certain of this result, the builders panelled the Body with the material which they knew would fully meet their requirements—

*Weather-Proof*

*Crack-Proof*

*Check-Proof*

TRADE

# VEHISOTE

MARK

(Wood-Fibre) PANELS

VEHISOTE possesses other features which recommend it highly. It takes a brilliant finish, which provides a perfect background for lettering and decoration, and retains its attractive looks longer than any other panel material.

VEHISOTE can be repaired quickly, in case of accident, and at very slight expense.

*Endorsed and Used by the Leading Builders of Better Bodies*

## THE PANTASOTE COMPANY, Inc.

CHICAGO  
Peoples Gas Bldg.

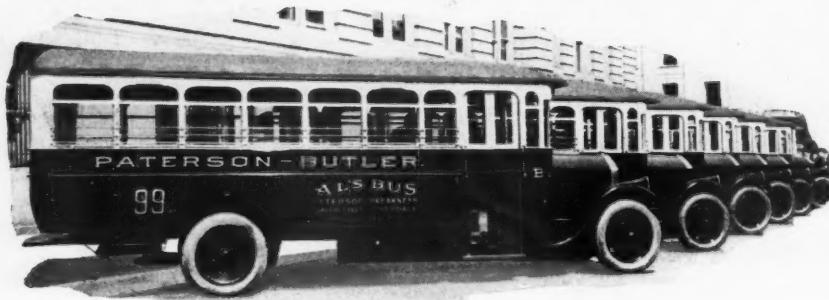
NEW YORK  
11 Broadway

DETROIT  
1446 Penobscot Bldg.

GREATER COMFORT—GREATER SAFETY—GREATER SPEED—**GREATER PROFITS**

# More Fares Per Day

## An Important Sales Feature of Pierce-Arrow Busses



Standard Chassis

**\$4600**

for 196-inch wheelbase,  
\$4750 for 220-inch  
wheelbase, at Buffalo;  
including starter, bat-  
tery, generator, solid  
tires and electric lights.  
Pneumatic tires and disc  
wheels optional at extra  
cost.

*Terms if desired*

**T**HE case of Mr. Albert Lydecker, who operates a bus line covering many lake and pleasure resorts in northern New Jersey, illustrates the unparalleled opportunities that have been opened up to dealers by Pierce-Arrow busses.

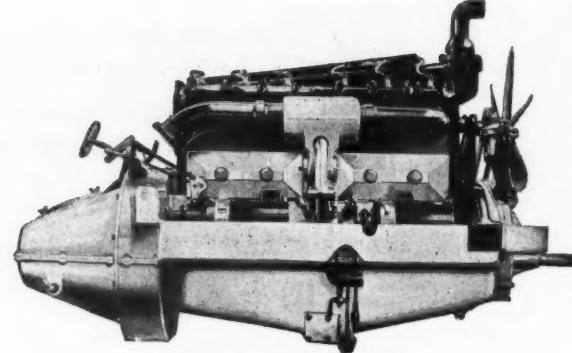
Mr. Lydecker formerly used four-cylinder converted-truck busses. He recently purchased nine modern Pierce-Arrow Dual-Valve six-cylinder motor busses because of their luxurious riding qualities, absence of vibration or noise, greater power, better speed, greater economy of operation and increased safety.

These busses are operated fourteen hours a day, covering 160 miles each. Mr. Lydecker reports an increase in receipts from each bus of \$10.00 per day over his previous equipment. He has also found that his Pierce-Arrow busses cost no more to operate than the four-cylinder converted-truck busses he formerly used.

Here is opportunity for the dealer who appreciates the phenomenal strides being made in the bus transportation field. The public today demands comfort, speed and safety. The Pierce-Arrow bus meets this demand more completely than any other bus. It is actually more comfortable than a fine limousine. It handles as easily as a high-powered touring car. It is the last word in modern bus development.

*Write to us for complete facts concerning the rare opportunity presented by the Pierce-Arrow franchise*

THE PIERCE-ARROW MOTOR CAR COMPANY  
Buffalo, N. Y.



### The Pierce-Arrow 6-Cylinder Bus Engine

The silent, Dual-Valve, Dual-Ignition Pierce-Arrow Bus Engine develops over 100 horsepower at 2500 revolutions per minute. It is so flexible that gear shifting is reduced to a minimum.

Speed of from 45 to 50 miles an hour can be maintained readily, if desired—which means that lower rates of speed do not tax the engine to the limit.

The bus is propelled by a trouble-free inverted worm gear drive. The low-hung chassis has an unusually short turning radius.

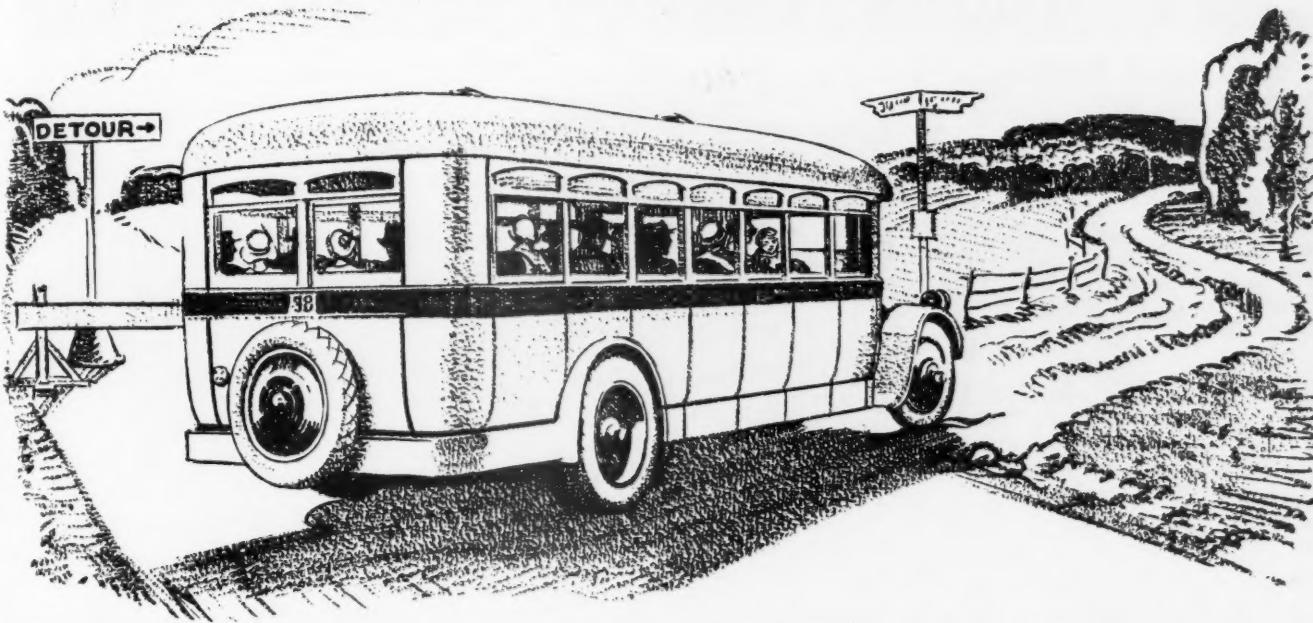
*The Pierce-Arrow Motor Bus chassis, produced in two lengths of wheelbase, will accommodate the Sedan, sight-seeing or pay-enter types of wood or steel bodies, ranging from 18-passenger capacity upward.*

# Pierce-Arrow

(546)

# HUCK DOUBLE REDUCTION BUS AXLE

Made by Sheldon under Huck patents



## Abundant power—and greater clearance

DETOURS try the mettle of a bus—and the metal, too. For bucking bad roads and snow, when the strain on driving mechanism is increased tremendously, the Huck Axle has all the power and strength that is needed and a big margin to spare. It has the lowest upkeep cost of any axle made and is so efficient in delivering power that a higher gear ratio can be used.

Slow engine speed reduces motor wear and tear—saves fuel and oil, too.

When using 36 inch tires, there is 11 inches of clearance beneath Huck Axles. Plenty for the deepest rutted roads. The entire driving mechanism is centralized in one compact, removable unit; the body of the bus can be brought much closer to the ground than with other axles.

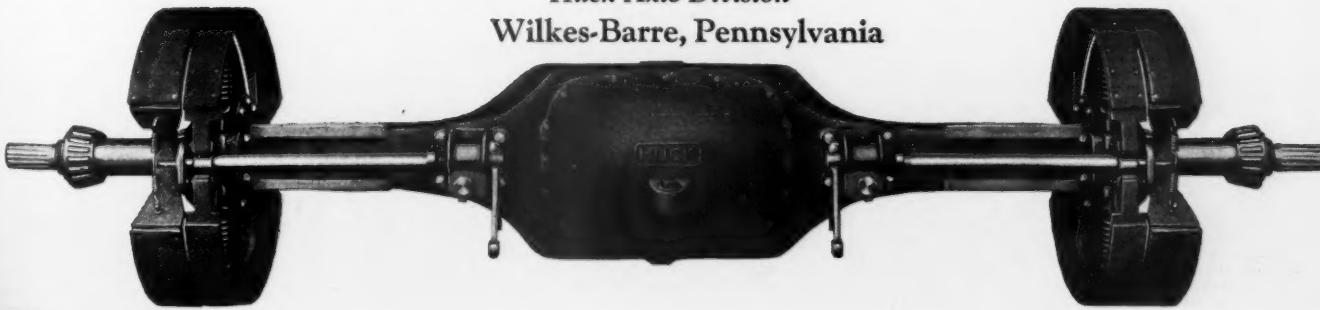
The many advantages of the Huck Axle are fully described in the booklet "The foundation for better buses"

WRITE FOR YOUR COPY TODAY

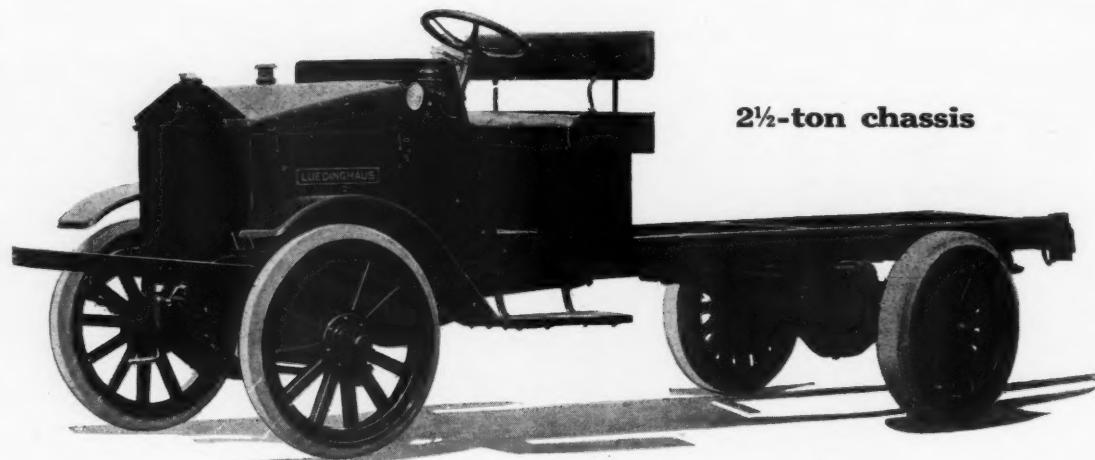
**Sheldon Axle & Spring Co.**

Huck Axle Division

Wilkes-Barre, Pennsylvania



# Maximum Transportation Value



Sell Luedinghaus Trucks and give your customer the greatest return on his investment—a maximum of service at a minimum of upkeep expense.

Success in selling trucks must be founded on ability to deliver economical transportation. Because LEUDINGHAUS TRUCKS will give your customer a *maximum of transportation value*, you can depend on them to help you create a sound and profitable retail truck business.

Dealers who are selling LUEDINGHAUS TRUCKS are enthusiastic over their ability to earn the support and lasting patronage of truck operators.

LUEDINGHAUS TRUCKS—one to 5-ton carefully engineered models—are assembled from nationally known and nationally serviced, standard units. Their surplus power and ample over-strength are outstanding features.

There is 82 years of successful heavy-duty vehicle construction behind the Luedinghaus organization. The truck they build today is as capable and finely balanced as is possible to make—a *quality unit*.

*Write today for proposition insuring you fair treatment and liberal factory support.*



Built by

**Luedinghaus-Espenschied Wagon Co.**

N. Broadway, Howard to Mound Sts., St. Louis, Mo.

Established 1843

# MEAD-MORRISON



## MOTOR TRUCK CRANES

### Fast Handling of Heavy Loads With Two or Three Men

**M**OUNT a Mead-Morrison crane and winch on your truck, and you can tackle a heavy loading or unloading job with a crew of two or three men. The crane operates on the truck engine's idling power—raises, swings and lowers loads rapidly and surely. Easy to operate—the automatic brake prevents slipping. Operator has complete control over the load at all times.

The crane mast is easily dismounted,

and the winch available independently for hoisting or hauling.

Transporters of cut stone, posts, castings, heavy pipe, bales or cases, and a wide variety of other heavy merchandise find the Mead-Morrison Truck Crane a time and labor-saving addition to their equipment. It speeds up loading and unloading, and saves the wages of extra hands.

*Write for full information*

**MEAD-MORRISON  
MANUFACTURING COMPANY**

922 Prescott Street, East Boston, Mass.

CAPSTAN WINCHES  
VERTICAL AND HORIZONTAL

DRUM WINCHES  
UNDERSLUNG AND BEHIND CAB

**Multiplies Man-Power  
HOISTING - HAULING - HANDLING**



**Certificate Holders for the Quarter  
Ending June 30th, 1924**

Albion Malleable Iron Co.	Voorheesville, N. Y.
American Chain Co.	Albion, Mich.
American Chain & Cable Co.	Bridgeport, Conn.
American Malleable Cartage Co.	Marion, O.
American Malleable Co.	Lancaster, N. Y., and Owosso, Mich.
Badger Malleable & Mfg. Co.	South Milwaukee, Wis.
Baltimore Malleable Iron & Steel Casting Co.	Baltimore, Md.
Belle City Malleable Iron Co.	Racine, Wis.
Chain Belt Co.	Milwaukee, Wis.
Chicago Malleable Castings Co.	West Pullman, Chicago, Ill.
Columbus Malleable Iron Co., The	Columbus, O.
Danville Malleable Iron Co.	Danville, Ill.
Dayton Malleable Iron Co.	Dayton, O., Ironston, O., and Canton, O.
Decatur Malleable Iron Co.	Decatur, Ill.
Devlin Mfg. Co., Thomas	Philadelphia, Pa.
Eastern Malleable Iron Co., The	Naugatuck, Conn.
Wor. Naugatuck, Conn., Bridgeport Malleable Iron Works, Bridgeport, Conn., Tracy Malleable Iron Works, Tracy, N. Y., Wilmington Malleable Iron Works, Wilmington, Del., Vulcan Iron Works, New Britain, Conn.	Bridgeport, Conn.
Erie Malleable Iron Co.	Erie, Pa.
Federal Malleable Co.	West Allis, Wis.
Fort Pitt Malleable Iron Co.	Pittsburgh, Pa.
Fraser & Jones Co.	Syracuse, N. Y.
General Electric Co.	Erie, Pa.
Glancy Malleable Corporation	Waukesha, Wis.
Illinois Malleable Iron Co.	Chicago, Ill.
Iowa Malleable Iron Co.	Fairfield, Ia.
Kalamazoo Malleable Iron Co.	Kalamazoo, Mich.
Lake Erie Car Co.	Laconia, N. H.
Lake Erie Malleable Castings Co.	Racine, Wis.
Lancaster Foundry Co.	Los Angeles, Calif.
Link-Belt Co.	Los Angeles, Calif.
Marion Malleable Iron Works	Marion, Ind.
Moline Malleable Iron Co.	St. Charles, Ill.
National Malleable & Steel Castings Co.	Cleveland, O., Chicago, Ill., Indianapolis, Ind., Toledo, O., E. St. Louis, Ill., St. Paul, Minn., Milwaukee, Wis., Peoria, Ill., Pittsburgh, Pa., Hillgrove, R. I., Rockford, Ill., Chattanooga, Tenn., St. Louis, Mo., Saginaw, Mich., Terre Haute, Ind., South Milwaukee, Wis., Benton Harbor, Mich., Rochester, N. Y., Temple, Pa., Terre Haute, Ind., Trenton, N. J., E. Moline, Ill., Hooperston, Ill., Warren, O., and Beloit, Wis.
Superior Steel Castings Co.	Watertown, N. Y.
Symington Co., T. H., The	Watertown, N. Y.
Temple Malleable Iron & Steel Co.	Wisconsin, Wis.
Terre Haute Malleable & Mfg. Co.	Terre Haute, Ind.
Trenton Malleable Iron Co., The	Trenton, N. J.
Union Malleable Iron Co., The	E. Moline, Ill.
Vermilion Malleable Iron Co.	Hooperston, Ill.
Warren Malleable Castings Co.	Hammond, Ind., and Beloit, Wis.
Warren Tool & Forge Co.	Warren, O.
Waukesha Malleable Iron Co.	Waukesha, Wis.
Waukesha Malleable Co.	Waukesha, Wis.
Waukesha Malleable Co.	York, Pa.
Zanesville Malleable Co.	Zanesville, O.

**"Stronger and Lighter"  
Says This Manufacturer About  
CERTIFIED MALLEABLES**

This prominent manufacturer so fully appreciates the value of Certified Malleables for vital parts of his machines that he features the fact in his Saturday Evening Post advertising by the following statement:

**"Now—Stronger and Lighter"**

A casting for a certain mixer part made of grey iron, weighs five pounds. Made of malleable iron, this part weighs only two pounds, and is stronger and stands shocks better. That is why we use more than 50 "Certified Malleable Castings in the new Rex."

The pride of this company is typical of the esteem in which Certified Malleables are held by all who use them:—Hundreds of manufacturers making automotive, railway, farm implement and other industrial equipment have put their products in the "Certified Class" by the generous use of a material that upholds the quality, prolongs the life and in every way enhances the value of all machines in which it is used.

*Your copy of our interesting book "Certified Malleable in Transportation and Industry" will be mailed upon request.*

**AMERICAN MALLEABLE CASTINGS ASSOCIATION  
UNION TRUST BUILDING  
CLEVELAND, OHIO**



**CERTIFIED MALLEABLE  
CASTINGS**

ZENITH

## Zenith's Large Scale Production Reconciles Quality and Price



*Looking down one aisle in the drill press department of the present modern, perfectly equipped Zenith factory.*

**ZENITH**  
CARBURETOR

*There is a Zenith for every car, truck, bus, tractor, airplane, boat or industrial engine*

CONSIDERING the fine workmanship and accuracy that goes into every Zenith part one might wonder how over 3000 Zenith carburetors could be produced in one day.

BUT if one could inspect the large Zenith factory and see the special machinery designed and built by Zenith, the reason would be plain.

SPECIAL machines, modern methods and efficient lay-out all make possible large scale production at a cost surprisingly low when the high quality of Zenith carburetors is considered.

**ZENITH - DETROIT CORPORATION**

*Manufacturer of*

**ZENITH CARBURETORS**

**DETROIT**

**MICHIGAN**



*Branches:*

**NEW YORK** . . . **CLEVELAND** . . . **CHICAGO**

*Over 1000 Service Stations*

## “Bull-Dog” Ignition

**S**PLITDORF Magnetos and Green Jacket Spark Plugs have been practically standard equipment on Mack trucks for eight years!

It is significant that the same ignition is standard equipment on Mack buses!

The seal of approval of the International Motor Company, makers of Mack trucks and Mack buses, represents the high water mark of ignition service requirements.

SPLITDORF ELECTRICAL CO.  
Newark, N. J.



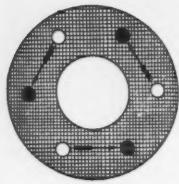
# NO SERVICE TOO SEVERE REQUIREMENTS TOO EXACTING

*Outwears metal  
Absorbs jolts  
requires no  
oil or care*



METROPOLE  
MOVING AND STORAGE

Thermoid Hardy  
Universal Joint



One of the reasons for Thermoid-Hardy's wearing quality is its fan-wise construction, which distributes the strain equally. Note the diagram of the ordinary fabric joint. The threads run in two directions only. Hence the tendency to separate.

#### Some Thermoid-Hardy Users

Allis Chalmers Mfg. Co.  
American Bosch Magneto Co.  
American Motors Corp.  
Anderson Motor Co.  
The Autocar Co.  
Available Truck Co.  
Barley Motor Car Co. (Roamer)  
Bartlett Motor Truck Co.  
Chandler Motor Car Co.  
Cleveland Automobile Co.  
Continental Motor Co.  
Cooke Motor Corp.  
Cowan Truck Co.  
Crow-Elkhart Motor Corp.  
Jas. Cunningham Son & Co.  
Curtiss Aeroplane & Motor Co.  
Dart Truck & Tractor Corp.  
Day-Elder Motor Co.  
Diamond T Motor Car Co.  
Doane Motor Truck Co.  
Dort Motor Car Co.  
H. H. Franklin Mfg. Co.  
Garford Motor Truck Co.  
Gramm-Bernstein Motor Truck Co.  
Gray Motors Corp.  
Hatfield-Penfield Steel Co.  
Hawkeye Truck Co.  
Haynes Automobile Co.  
Hendrickson Motor Truck Co.  
Holt Mfg. Co.  
Hupp Motor Car Corp.  
Indiana Truck Co.  
International Harvester Co., of A., Inc.  
International Motor Co.  
Jackson Motors Corp.  
Jordan Motor Car Co.  
Kelly-Springfield Motor Truck Co.  
Kentucky Wagon Mfg. Co., Inc.  
Kissel Motor Car Co.  
Locomobile Co.  
Maxwell Motors Corp.  
McFarlan Motor Car Co.  
Mercer Motors Co.  
Moreland Motor Truck Co.  
Nelson & LeMoon  
E. A. Nelson Automobile Co.  
O'Connell Motor Truck Co.  
Olds Motor Works  
Packard Motor Car Co.  
Parker Motor Truck Co.  
Patriot Motors Co.  
Pierce-Arrow Motor Car Co.  
Reo Motor Car Co.  
Republic Motor Truck Co.  
Rochester Motor Corp.  
Root & Van Dervoort Eng. Co.  
Sanford Motor Truck Co.  
Stewart Motor Corp.  
Stoughton Wagon Co.  
Studebaker Corp.  
Superior Products Mfg. Co.  
Traffic Motor Truck Co.  
Transport Truck Co.  
United Motors Co.  
Velie Motor Corp.  
Walter Motor Truck Co.  
Wichita Motors Co.  
Wilcox Trux Co.  
Willys-Overland, Inc.  
Worthington Pump & Machinery Corp.  
Yellow Cab Co.



Waste or selvage edges

## The Long-Lived Universal That Keeps the Car "Youthful"

AS to Thermoid-Hardy's "wearability" under severe conditions, the Service Manager of one of the great Motor Truck Companies says: "We have used Thermoid-Hardy Joints for about a year and a half and we have never replaced a disc or joint to my knowledge."

The Engineering Department of another manufacturer goes on record that "we can use a great deal more power with Thermoid-Hardy Joints than with metal joints, because Thermoid-Hardy cushions the shocks. With the Thermoid-Hardy Joints the life of jack shafts and gears is lengthened, probably about one and one-half times."

The names of both these concerns will be supplied on request.

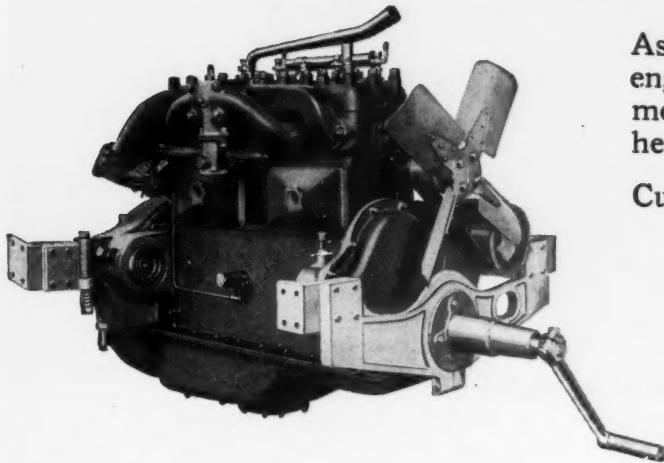
#### THERMOID RUBBER COMPANY, Trenton, N. J.

New York, Chicago, Los Angeles, Detroit, Atlanta, Seattle, Kansas City,  
Boston, San Francisco, Cleveland, London, Paris, Turin

*Makers of Thermoid Brake Lining, Rexoid Transmission  
Lining, Thermoid Tires*

# Thermoid-Hardy Universal Joint

# For Heavy Duty Hauling



As original equipment, or to replace worn-out engines of other types, a Hinkley Engine yields more Ton-Miles-Per-Dollar than any other heavy-duty motive power of which we know.

Cut out the engine troubles that drain your profits, and eliminate the major overhaul delays that are bringing gray hairs to the fleet boss, by standardizing on Hinkleys. The Hinkley Plan substitutes a factory-built engine for any ravelled motor in your fleet.

Ask for the folder that tells all about it.

Models and adaptations for all sizes. Parts and Service Stations in 85 cities.

# For Ford Trucks

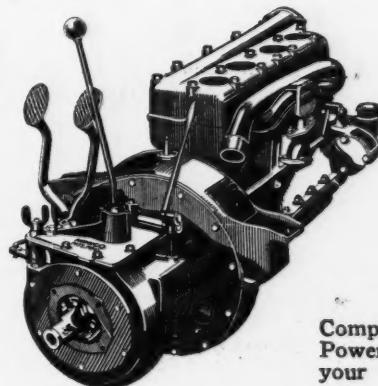
Our Himico Unit Power Plant substitutes an idealized engine, and a highly perfected sliding gear transmission, for your worn-out Ford motor and planetary set.

For little more than the cost of a major overhaul, you have a veritable Super-Ford.

Or you can buy the Himico Transmission separately, bolt it direct to your present motor, and banish forever all band problems, and power losses.

The Himico is the only sliding gear transmission that completely replaces your planetary set. Three forward speeds and reverse, with disc clutch. Emergency low—42 to 1—and power take-off, are available extras.

Not an attachment, but an actual replacement.



Complete Himico Power Plant (and your old Block)

**\$184**

Himico Transmission (Fits your Ford Motor)

**\$137**

**HINKLEY MOTORS, INC.**  
P. O. Box 839  
DETROIT, MICHIGAN

**H I M I C O**

# Strength

"The ability to resist stresses incident to various loads and shocks is a matter of strength.

"The purpose of the Strength Tests was to determine the effect of static loads as well as impact or shock loads on samples of Dayton Steel Wheels.

"Referring to the Radial Static Strength Test, the following tabulation shows the loads at the proportional limit, the maximum service load and the factor of safety based on proportional limit.

Test No.	Load at Proportional Limit, lb.	Maximum Service Load, lb.	Factor
1	32,000	2000	16.0
2	40,000	2700	14.8
3	20,000	7800	2.6
4	12,000	1500	8.0
5	45,000	2100	21.4

"These figures show that the wheels have a suitably large safety factor based on proportional limit, not to mention the ultimate strength.

"The users of Dayton Steel Wheels have testified to the ability of the product to resist the forces and shocks imposed on them in service."

*Extract from report of Underwriters' Laboratories on Dayton Steel Wheel, Nov. 7th, 1923.*



"Strength" is number four of a series of Dayton Steel advertisements taken verbatim from the report on Dayton Steel Wheels from the Underwriters' Laboratories. "Practicability," "Durability" and "Strength" in a steel wheel are best determined by service records. And the Dayton Steel Wheel has proven and is proving its great strength, practicability and durability by its record in service. To increase the earning capacity of your trucks specify them on your next order.

**The Dayton Steel Foundry Co.**  
Dayton, Ohio

# Dayton

Steel Truck Wheels



## Grip and Resilience

The Republic Stag leads the field in traction and cushioning qualities.

\* \* \* \*

The exclusive Stag Tread gives a new security to truck operation.

STURDY STUDS in staggard arrangement prevent skidding and slipping and make chains unnecessary on wet and mired roads.

RESILIENT TREAD—the spacing of the studs permits of perfect flexing under heavy loads. The tire retains its contour and does not develop a "traction wave."

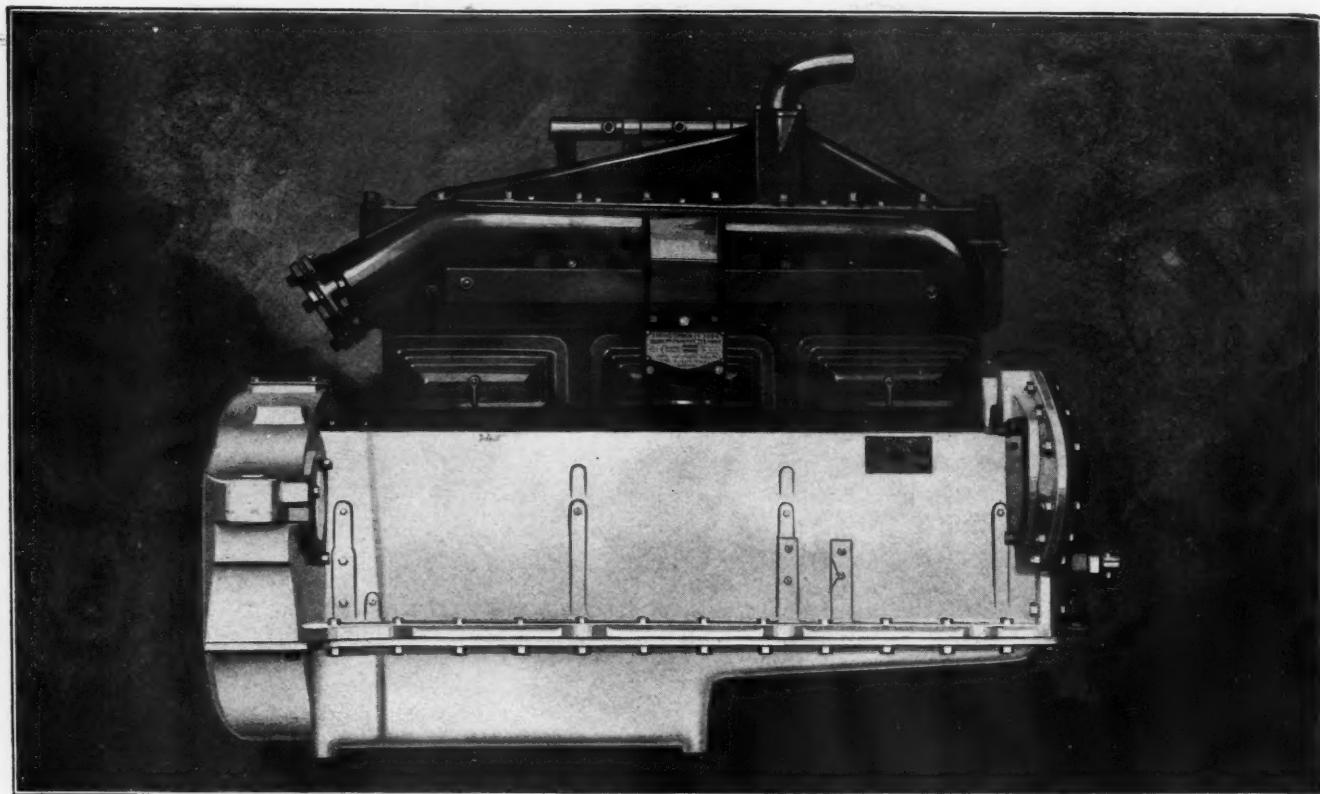
The nearest Republic Distributor will gladly demonstrate. He is equipped to serve you efficiently.

THE REPUBLIC RUBBER CO.  
Executive Office: 33 West 60th St., N. Y. C.  
Factories: Youngstown, Ohio

## REPUBLIC STAG TRUCK TIRES



Displayed by  
Certified Republic  
Distributors only



Model B. U. S., 4" Bore x 5 1/8" Stroke, 386.7 cubic inches

## The first *real* Heavy-duty 6-Cylinder Motor Coach Engine

This new Buda 6-cylinder motor coach model is not a passenger car engine adapted to motor coach service. It is a heavy-duty engine *especially designed* to meet the rigid demands of transportation. Ready acceptance on the part of motor coach builders has confirmed the soundness of its engineering principles.

Engineers are amazed at its freedom from vibration, realizing that this in-

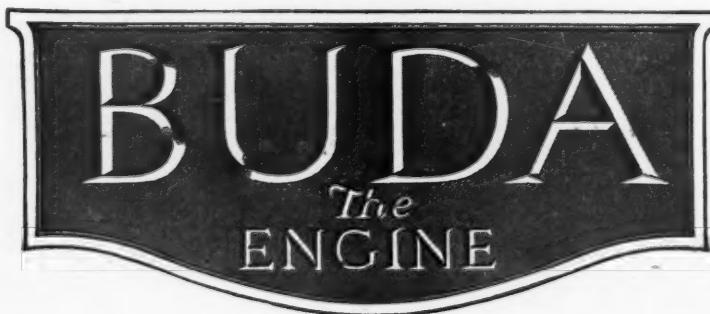
sures utmost comfort for the passenger. Drivers speak in glowing terms of its unusual flexibility. Men who figure costs are impressed with its economical operation.

You ought to know more about this remarkable new engine, which is now in quantity production and ready for immediate delivery. Write today for illustrated booklet and complete information.

*See the Buda exhibit at the American Electric Railway Association Convention, Atlantic City, Oct. 6-10*

**THE BUDA COMPANY, HARVEY CHICAGO SUBURB ILL.**  
ESTABLISHED 1881

*Buy only genuine Buda Parts for your Buda engine  
New Parts Catalog No. 432 now ready*



## ROADKING 21-passenger Pay-Enter Safety Bus on 168" Specialized Chassis



# NEW!

## A NEW Economy for Bus Operators A NEW Opportunity for Dealers

There is a NEW, big, husky metropolitan bus ready for bus operators and motor truck dealers. It is built on a rugged, powerful chassis of 168-inches wheelbase—a *specialized* vehicle from stem to stern—and is completely equipped for immediate operation.

This bus is trim and smart, handsomely finished inside and out. It is designed for paying passenger capacity as well as passenger comfort.

And it is sold at a price that provides a new economy for the operator of high-quality buses and a new opportunity for the seller of commercial transportation.

That is a fleeting word-picture of the NEW RoadKing 21-passenger Metropolitan Pay-Enter Safety Bus and the NEW RoadKing 168-inch *specialized* bus chassis.

Price alone would compel attention and attract a lot of business for this new bus creation. But the appeal to operators will rest on more than the low investment necessary to put a NEW RoadKing Metropolitan Bus, a DeLuxe Sedan or a RoadKing Tour-a-Bus in service.

For one thing, the experienced truck operator will recognize the strength and quality in the NEW RoadKing *specialized* bus chassis. It isn't a makeshift adaptation, but a chassis built from the ground up for the mounting of RoadKing passenger units.

Added to the advantages of low investment costs of the NEW RoadKing bus are the known performance of previous bus types in the RoadKing line. In every field the RoadKing has made good.

You operators who have been looking for a high-quality, large capacity bus for city and suburban service—here it is.

You dealers who have watched RoadKing success from the outside and know how it is coming to the front in the Speed Truck market will appreciate the fact that the truck itself has built its own success. Its success is founded on merit.

Now the RoadKing proposition is more attractive than ever. The NEW *specialized* bus chassis completes a wonderful line of Speed Truck and Bus chassis and bodies.

*It will pay both bus operators and dealers to get in touch with the*

**MASON MOTOR TRUCK CO., Flint, Mich.**

IT PAYS TO BUY OR SELL  ROADKING SPEED TRUCKS

## Why so many truck owners buy Kelly Kats

To be satisfactory on trucks of heavy and medium capacity, tires must have certain qualities.

They must be able to get traction in all kinds of going.

They must give ample cushioning for the truck.

They must be able to stand severe punishment.

They must give long mileage.

They must be economical to use.

Kelly Kats combine all these qualities to a degree not equalled in any other type of tire. That is the reason they are the most widely used truck tires on the market.

### There are no Caterpillar tires but Kelly Kats

KELLY-SPRINGFIELD TIRE CO.  
250 West 57th Street, New York



Watch a set of Kelly Kats in action. Notice how they grip the road. This ability to get traction is one of the reasons they are so popular. Other reasons are their exceptional resiliency, long mileage and low cost per mile.

## Here Today—Here Tomorrow!

Not "Here today—Gone tomorrow."

One of the big factors in GMC dealer success is the soundness of the GMC factory.

Here is an institution with an uninterrupted history of fine truck building that started clear back at the beginning of the truck industry,

- a Division of General Motors
- a leader in volume of sales
- a leader in truck design
- responsible for the now famous GMC Two-Range Transmission which gets both top speed and tremendous pulling power from an engine of economical size.
- which stimulates sales by improving GMC performance and increasing GMC radius of action over that of any other truck.

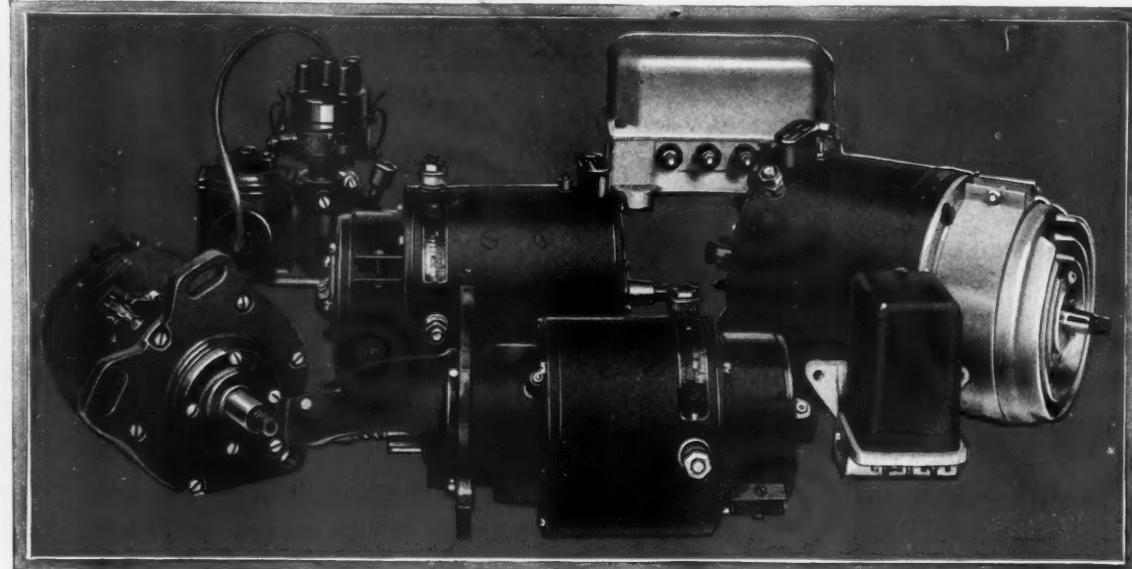
GMC will be here tomorrow but your territory may not be. Write for the GMC details today!

GENERAL MOTORS TRUCK COMPANY  
*Division of General Motors Corporation*  
PONTIAC, MICHIGAN



# NORTH EAST

Electric      Starting      Lighting      Ignition      Horns      Speedometers



## For Every Type of Bus

Generators Built with the North East dependability that has never been known to quit - specially designed for bus requirements - available in various capacities from 115 to 600 watt output.

Voltage Regulators Permanent adjustment - operate indefinitely without attention - fully compensated to offset temperature changes - positive control of generator voltage under all conditions - prolong battery life by ideal taper charge - rate highest when battery is low, cut to minimum as battery becomes charged - operation just as satisfactory with no battery in circuit.

Starting Motors Built for severe service - heavy type bendix drives - high percentage reserve power to meet cold weather conditions - available with or without internal gear reduction.

Starting Switches and Cut-Outs Ample capacity and durability to meet severest requirements.

Ignition Units Good spark under all conditions - hottest at starting and slow speed operation - entire freedom from contact pitting or burning - easily timed - all parts accessible - available with coil and timer-distributor in same unit or separate, or integral with generator - automatic or manual spark advance.

Horns Powerful compelling tone - instant response - scientific electrical and mechanical design has set a new standard for long life.

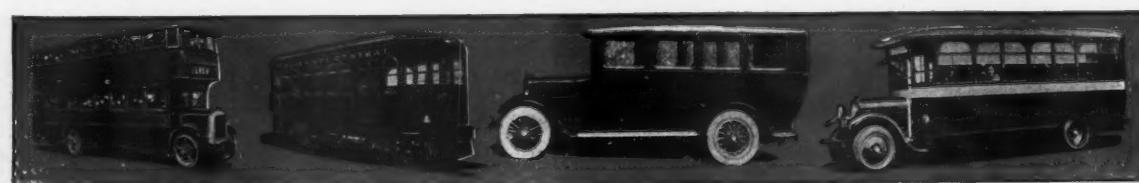
Speedometers Accurate - built with same ruggedness as all North East equipment - 100,000 mileage register - large readable figures - highest grade flexible drive shafts.

Catalogue 100-B covers North East Equipment for Motor Buses. Mailed on request.

## NORTH EAST ELECTRIC CO.

ROCHESTER  N. Y., U. S. A.

Manufacturers of Equipment for



Yellow Coach  
Six Wheeler  
Fay & Bowen

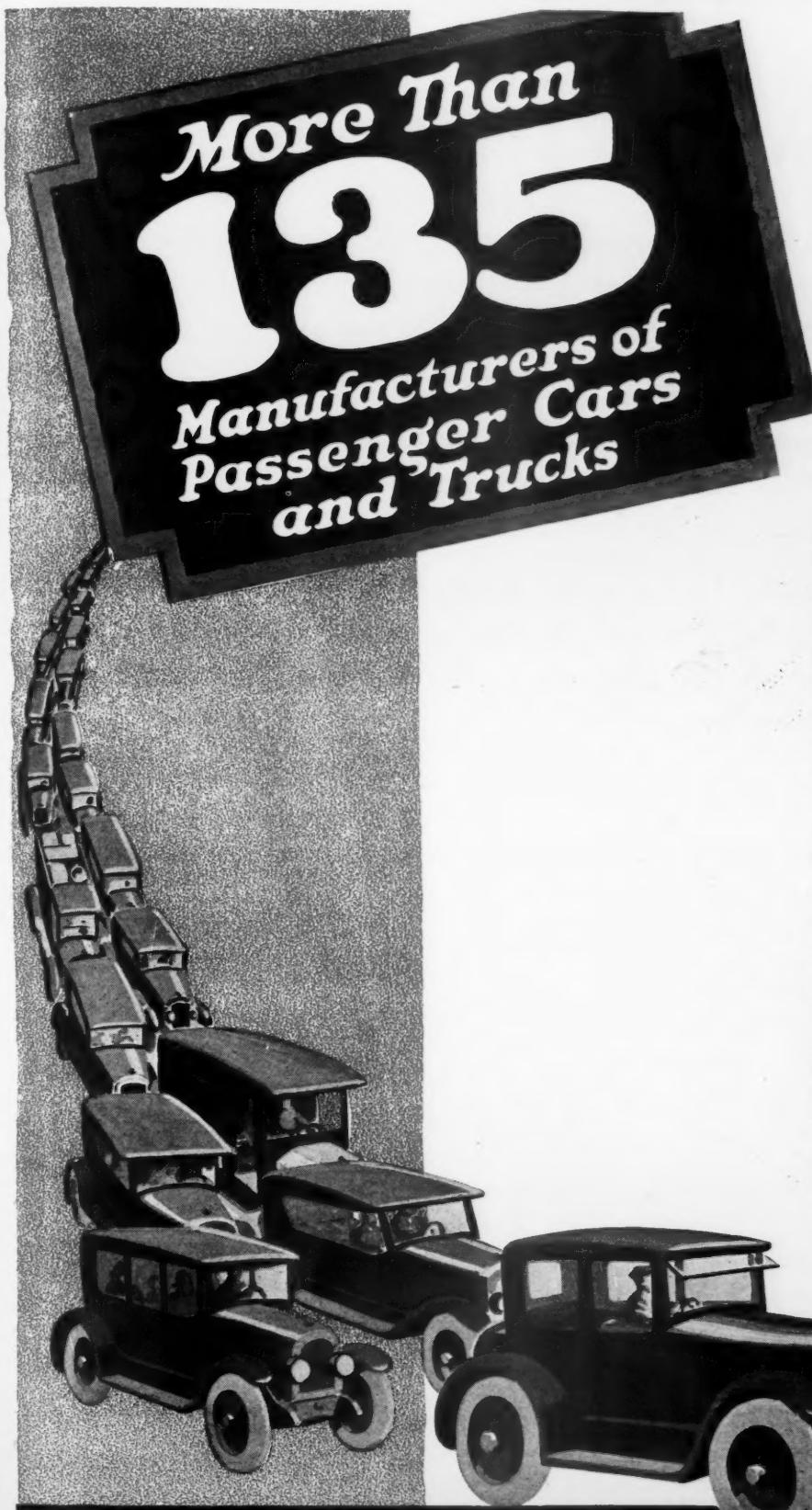
Dodge Brothers  
Yellow Cab  
Sterling Marine Engine  
Acme Road Machine

Reo  
Four Wheel Drive  
Dodge Watercar  
Holt Mfg. Co.

White  
Graham Brothers  
Berliet  
Yellow Sleeve Valve Engine

Fifth Avenue Coach  
Delage  
Leon Bollee

Space 321 at A. E. R. A. Convention



## Use Stromberg Carburetors as Standard Equipment

WHEN the big majority of America's manufacturers of pleasure cars and trucks specify and use Stromberg Carburetors as standard equipment—there's a reason and a mighty good one. They know that the Stromberg Carburetor utilizes every drop of gas that passes through it, which means real economy. These same wise manufacturers know by actual tests that Stromberg means flexibility, easier starting, more power and smoother operation.

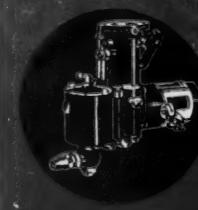
Hundreds of Stromberg dealers are enjoying the satisfaction that comes from big sales and liberal profits on Stromberg Carburetors. You, too, can build up a substantial carburetor business with this fast-selling economy carburetor.

Write us! Do it now! Ask us to send you complete facts pertaining to a special sales and co-operation plan for Stromberg dealers. If you are desirous of greater business success sell Stromberg Carburetors and give your customers lasting satisfaction.

*A special Stromberg carburetor for every car*

The Stromberg  
Motor Devices Co.  
Dept. 936  
64 E. 25th Street  
Chicago, Ill.

New **STROMBERG** Does it!  
CARBURETOR



# Nationwide Service



*The Sign of  
Universal Gas Service*

*The Gas of  
a Thousand Uses*

Owners and operators of great trucking fleets know the importance of dependable light for their trucks—especially with the approach of the autumn and winter season when the nights grow longer.

Through twenty years Prest-O-Lite has rendered the priceless service of dependable light. In these years Prest-O-Lite has become international in its spread.

Prest-O-Lite Gas for truck lighting gives a clean unfailing light under all conditions of roads or weather. It is economical in operation—it is approved by public authorities.



# e of Dependable Light--

Prest-O-Lite outlives the truck.

Thirty-six big gas producing plants supply thousands of Prest-O-Lite Exchange Stations scattered all over the country. You can always get a full tank for your empty one by paying a very small amount for the gas only.

---

THE PREST-O-LITE COMPANY, Inc.  
INDIANAPOLIS, IND.

New York Office: 30 East 42nd St. Pacific Coast Factory: 599 Eighth St., San Francisco  
Canadian Factory: Prest-O-Lite Company of Canada, Ltd., Toronto, Ont.

---

TO DEALERS:

By recommending Prest-O-Lite Gas Equipment to your trucking trade you can build up a steady and profitable business in tank exchanges.

For complete details of the dependable way of lighting trucks see your local Prest-O-Lite distributor or write to Indianapolis, Ind., Dept. Q.



# The new Atterbury

## Read why Dealers don't class it with ordinary speed jobs

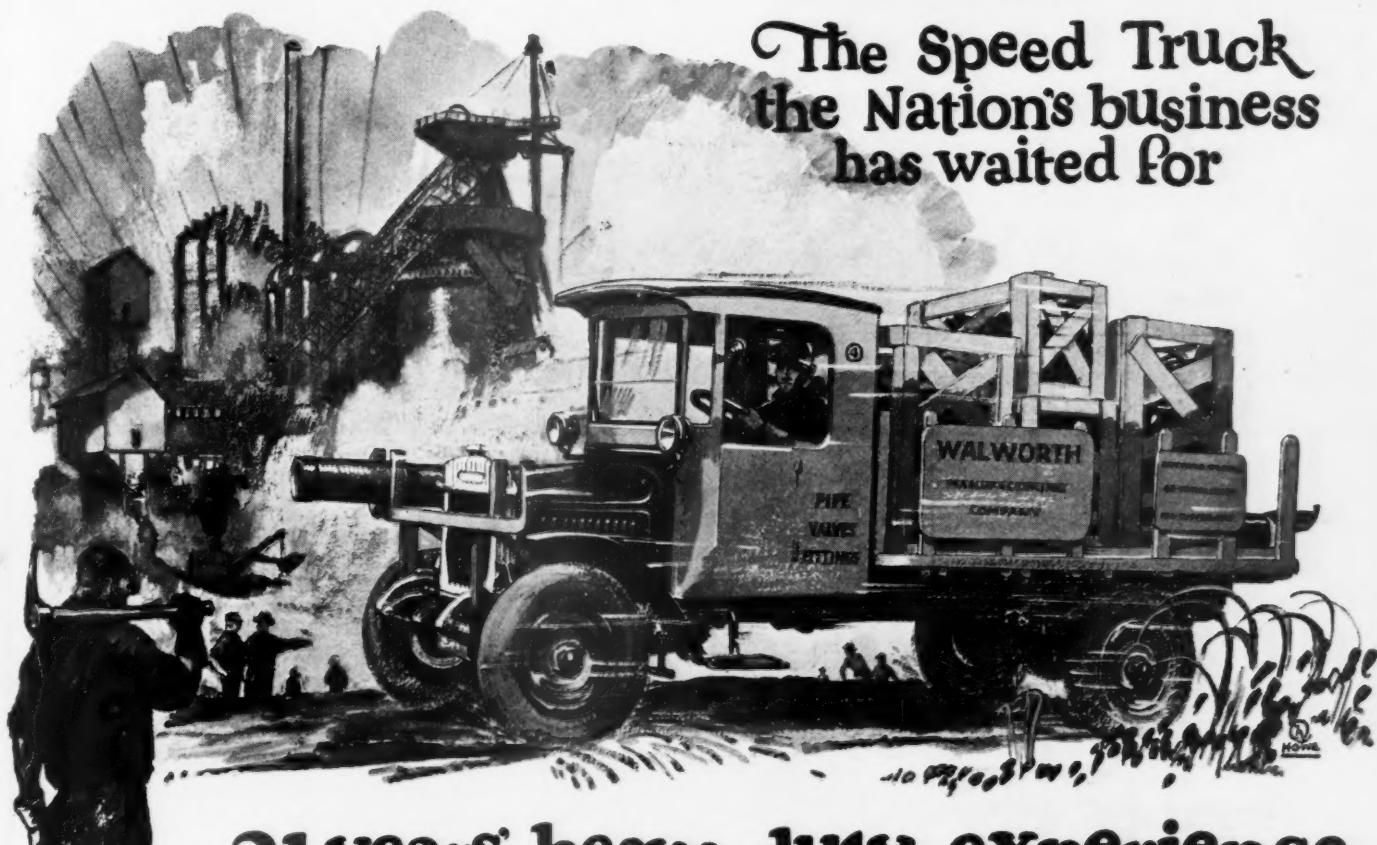
The truck men in America are taking their hats off to the New Atterbury Highway Express and the job it does. They tell us, "Yes, it does cost more to buy than light delivery wagons, but its performance gives us the jump on competition."

## Here are 14 answers to the price question

- 1** **1½ to 2 ton rating—a HE-Truck, not a delivery wagon.**
- 2** **Weighs in at 4750 lbs. chassis weight—more truck and worth more.**
- 3** **Speed of thirty miles an hour—loaded. Makes one trip do the work of two at a one-truck cost.**
- 4** **Big over-size motor—4" x 5¼" Buda—costs more and does more.**
- 5** **Timken Worm Drive Axle—the best there is and the cheapest in the end.**
- 6** **Bosch High-Tension Magneto—the kind with a kick in it—always.**
- 7** **Electric Lights standard equipment included in the price—not thrown in at a loss after the deal is made.**
- 8** **Enclosed cab part of the job—not an extra to be added, or donated, later.**
- 9** **Balloon-type cord tires, 30 x 5 front, 32 x 6 rears.**
- 10** **Steel wheels standard equipment—always preferred for appearance, but usually sold as extras.**
- 11** **Low center of gravity for speed, safety and easy loading.**
- 12** **150-inch wheelbase. Compare that with the cheaper ones!**
- 13** **Built for a twelve-foot body—the tonnage capacity is there and so is the size.**
- 14** **One chassis price covers everything. When you say \$2550, you have said it all.**

# Highway Express

The Speed Truck  
the Nation's business  
has waited for



21 years' heavy duty experience  
and then we added SPEED

For twenty-one years Atterbury has built heavy-duty trucks. The temptation to go in for speed has been great, but we wanted more than speed.

The Atterbury Highway Express has been built for a new market. It has speed, yes,

but it has tonnage too, and added to that is 4750 pounds of sturdy guts to stand the gaff.

Atterbury dealers everywhere are finding that it's the Speed Truck the Nation's Business has waited for. They are getting the business and going strong!



MAIL THIS COUPON TODAY

Atterbury Motor Car Co.  
Buffalo, N. Y.

Heavy duty plus speed sounds good. Send me the  
whole story.

Name .....

Address .....

**ATTERBURY MOTOR CAR CO.**  
**BUFFALO, N. Y.**



*"Dominance in the hoist field is based on the same faithful attention to detail so essential in the building of record-breaking speed boats."*

*Gar Wood*

## WOOD UNDERBODY

Hydraulic Hoists and Steel Bodies

*Sales and Service:*

Baltimore	New York
Boston	Philadelphia
Chicago	Pittsburgh
Cincinnati	Portland
Cleveland	Richmond
Columbus	Sacramento
Dallas	St. Louis
Denver	Salt Lake City
Fresno	San Francisco
Fort Wayne	Seattle
Harrisburg	Windsor, Ontario
Indianapolis	Paris, France
Knoxville	Southport, England
Los Angeles	Barcelona, Spain
Louisville	Hamburg, Germany
Milwaukee	Geneva, Switzerland
Minneapolis	Sydney, Australia

*Factories:*

DETROIT, MICHIGAN  
WINDSOR, ONTARIO  
SOUTHPORT, ENGLAND  
PARIS, FRANCE

## PREDOMINANT

Because of their brute power and uniform dependability, due to their simplicity of construction, Wood-Detroit Hydraulic Hoists are first choice of over 90% of all makers of motor trucks. They are the product of the experience gained in the building and installing of more than 100,000 units.

The fleet shown above illustrates three outstanding advantages:

LOCATION of hoist under the body allowing longer body without overhang;

HIGH ANGLE of elevation assuring quick, clean discharge of load;

SIMPLICITY—there being only three moving parts—a piston and two gears operating in oil.

The "straight line drive" delivers the engine's power with minimum loss and minimum wear, while the "rolling wedge" action results in lower pressure and greater power—assuring dependability in operation.

The largest hoist and body manufacturing plants in the industry coupled with a nation-wide organization offer you a predominant service.

*The new complete catalog is ready. Send today for your copy*

## WOOD HYDRAULIC HOIST & BODY COMPANY

*World's Largest Maker of  
Hydraulic Hoists and Steel Dump Bodies*

7944 RIOPELLE STREET

DETROIT, MICHIGAN

*A Hoist on Every Truck*



## Fleet of 9 Overland Spads Saved \$4000 So They Bought 5 More

It pays to load your delivery problems on the broad, capable shoulders of the Overland Spad.

The Trio Laundry Co., of Atlanta, Georgia, started with one Overland. It paid. Then they bought four more Overlands. Then two more. And soon two more. At the end of the year, these first nine Overlands had saved about \$4000 over the yearly cost of the light trucks the Overlands replaced.

Now they have 14 Overland Spads on the job. Each one cleaning up a big day's work and taking the starch out of delivery costs. According to Mr. T. C. Perkins, vice-president of the Trio Company—

"Our Overlands have proven themselves, in our opinion, the best light delivery cars on the market, being economical in gas and oil, easy on tires, and our *repair bills* have

*been less than one-half* our former repair expense.

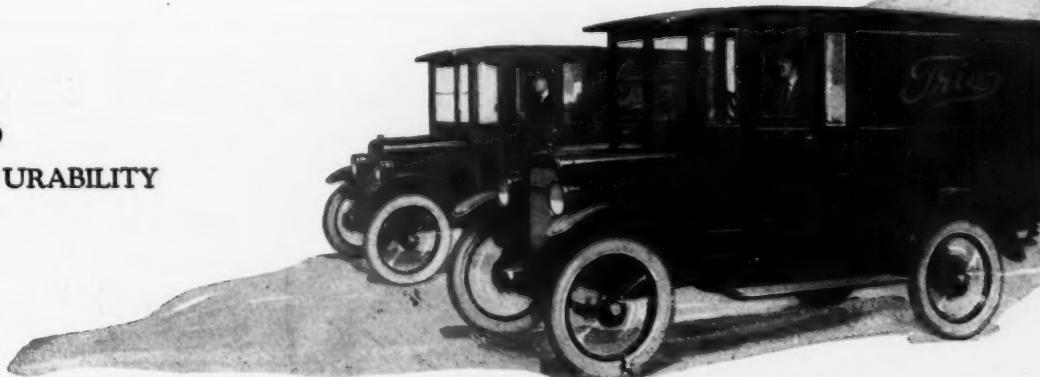
"Not only are we very much pleased with the service we have received from these trucks, but our route men are enthusiastic, and we take pleasure in recommending your truck to those in need of a reasonably priced light delivery service."

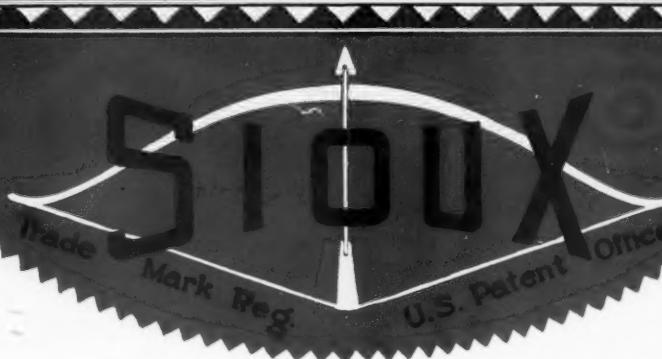
In all lines of business, it's the same story—Overland Spads are *paying their way*. Sturdy express bodies and steel panel bodies, with variations for all needs—built of tough ash, oak and maple, reinforced with stout bracings and strappings—*strong!*

You can work an Overland Spad until it doesn't owe you a penny. That's what any number of Overland fleet owners will tell you!

WILLYS-OVERLAND, INC., TOLEDO, OHIO • WILLYS-OVERLAND SALES CO. LTD., TORONTO, CANADA

SPEED  
POWER  
AND  
DURABILITY





## For Practically All Reseating Jobs

this set contains the proper size reamer and pilot stem. Comes complete in a box with each stem place and each reamer post marked for each size. Set includes 10 Sioux Valve Seat Reamers and 4 Pilot stems in the following sizes:

1½ in. . 45°	1½ in. . 30°	1¾ in. . 45°	2 in. . 45°	2¼ in. . 45°
1⅝ in. . 45°	1¾ in. . 30°	1⅞ in. . 45°	2⅛ in. . 45°	2½ in. . 45°

Pilot Stems  $\frac{5}{16}$ -in.,  $\frac{3}{8}$ -in.,  $\frac{7}{16}$ -in.,  $\frac{1}{2}$ -in.

*Increase shop production and profits by reaming pitted valve seats before grinding.*

## VALVE SEAT REAMER SET

Ask Your Jobber About It

ALBERTSON & CO.

SIOUX CITY, IOWA





21-PASSENGER DE LUXE SEDAN BUS

**ESTABLISHED IN 1849**

There is placed at your disposal for custom body work—

The experience gained in many years of building high-grade passenger and commercial bodies.

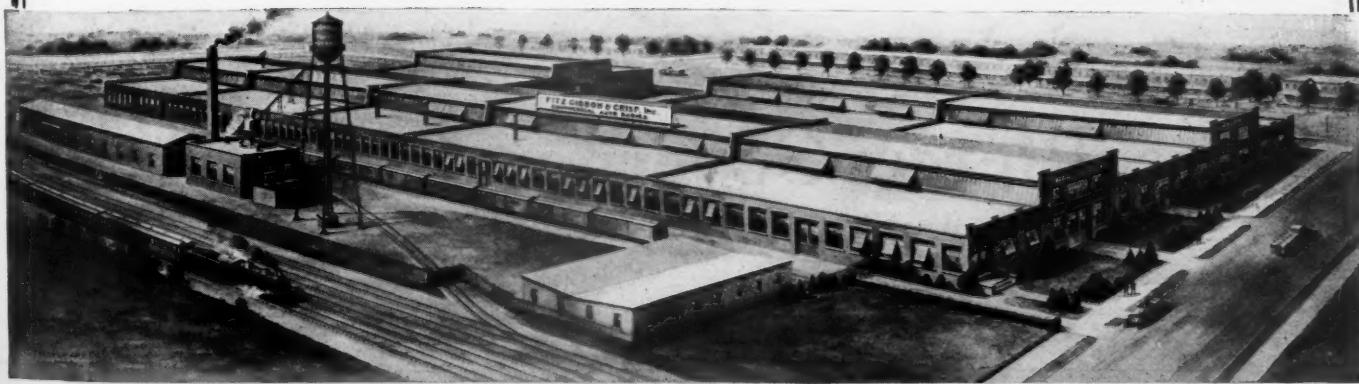
A modern factory, with complete equipment.

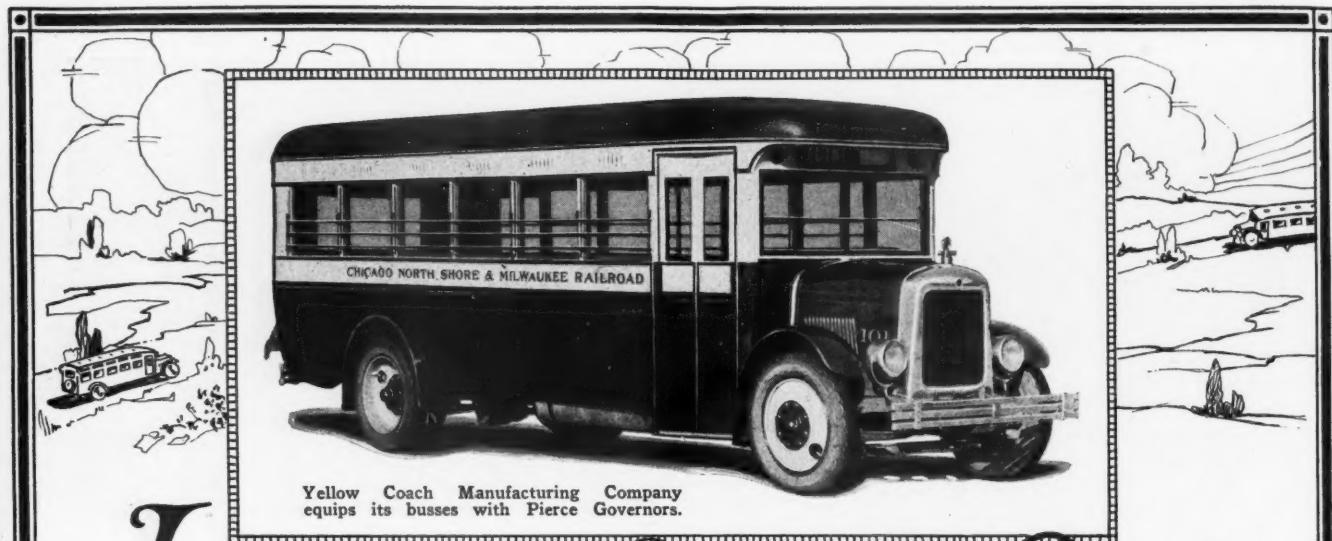
We can build any style of body to meet your individual taste or requirements.

Our Engineering Department is always ready to serve you.

**SIGHT-SEEING BUS—PAY-ENTER BUS—DE LUXE SEDAN****Fitz Gibbon & Crisp, Inc.**

Trenton, N. J.





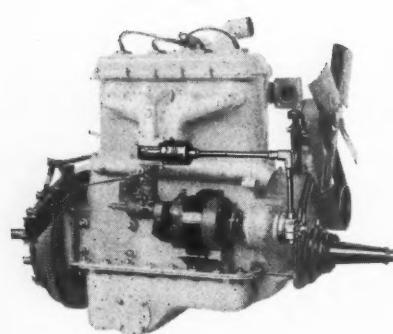
# Increased Safety and Profits

--- for the busses equipped  
with Pierce Governors

FOR bus equipment the Pierce Governor is a steadily increasing necessity. Nowhere is the wonderful value of this device more convincingly shown than in the bus business. The Pierce Governor holds the bus at uniform engine speed, regardless of changes in load, or hills. Busses equipped with Pierce Governors cannot be driven at reckless speeds. They are, therefore, longer-lived, make fewer trips to the repair shop, and can be operated more economically.

### Automatic Speed Control

If you own and operate your own bus you'll appreciate the way the Pierce Governor relieves the driver of constant attention to the throttle. It makes the handling of a bus much easier because it automatically holds the engine at a governed speed—loaded or empty, up hill or down hill. Hand throttle can be instantly set for any speed lower than governed speed.



Sleeve Valve Engine used by Yellow Coach Manufacturing Company, showing Pierce Governor Installation.

*Busses Equipped with Pierce Governors Pay Bigger Dividends on the Investment*

## The Pierce Governor Company

*"World's Largest Governor Builders"*

Anderson

Indiana



*This 25-passenger parlor car will be exhibited at the A. E. R. A. Convention in Atlantic City, October 6-11. A number of other types will be shown—all on the Model 50-A White Chassis, which is low, safe, attractive, powerful, quiet and perfectly balanced.*

# Performance has built White Bus prestige

**T**HE motor bus has met the public demand for a dependable service of greater flexibility, convenience and comfort.

Signal recognition has been given The White Company—pioneer builder of motor busses—for its part in this contribution to public comfort and convenience. More White Busses are in service in this country than busses of any other high-grade make.

The White Company has always held that transportation is one sympathetic system, most efficient when rails, water and highways are each permitted to discharge the function for which each is best fitted. Profitable operation of thousands of White Busses in conjunction with all other forms of transportation proves this belief is sound.

Electric railway companies last year bought more White Busses than busses of all other makes combined. Operating experience alone accounts for this preference.

For schools, for hotels, for industrial plants, for resorts, for sightseeing, for

service in cities, for service between cities—wherever people demand safe, comfortable carriage on dependable schedule over the highways—White Busses have won preference.

Hundreds of veteran White Busses are still running after 100,000, 300,000—and some 500,000—*money-earning miles*.

The Model 50-A White Bus is not a truck chassis—but a distinct bus chassis developed as a result of practical, demonstrated ability to meet the exacting requirements of passenger transportation. Changes in design are made only after they have thoroughly proved their merit in practical bus service. When such changes are made they can be applied readily to chassis already in service. Thus the busses in service are kept modern and rapid depreciation in value of equipment is avoided.



*White Service*  
Assuring continuous, sustained  
transportation everywhere

Low, safe, attractive, powerful, quiet, dependable, perfectly balanced, Model 50-A affords the maximum of comfort and convenience to the riding public and the maximum of profit to the owner.

THE WHITE COMPANY  
CLEVELAND

# WHITE BUSSES

*Quality  
Trucks  
Since  
1910*

**United**

---

**UNITED MOTORS PRODUCTS COMPANY**  
Grand Rapids, Michigan



*The Federal Authorized Sales Agency Sign—nationally advertised for years—is the public's identification of every Federal dealer*

## The Confidence Motorists Have in This Sign Means Money to You

Millions of motorists have learned through Federal national advertising, that they can thoroughly rely on the dealer displaying the Federal Authorized Sales Agency Sign for a square deal in quality, price and service. The fact that Federals have been serving motorists well for over 20 years is another reason why the Federal Blue Pennant Cords are easy to sell.

The Federal Authorized Sales Agency Plan offers you extra large profits with other unusual features.

What better assurance of good business and good profits can any dealer have?

These advantages make the Federal Authorized Sales Agency proposition one of the most desirable and satisfactory available today.

*Information regarding the Federal Authorized Sales Agency Plan will gladly be sent any interested dealer*



### Whitfield-Resilient De Luxe Pay-Enter

The illustration shows a De Luxe 21-passenger design mounted on a Larabee XH3 Chassis.

Besides the De Luxe Pay-Enter, we make a Standard Pay-Enter Bus, and a De Luxe Sedan.

## The Maximum of Comfort and Permanent Satisfaction—

with a minimum of expenditure in first cost and upkeep, is made possible by the standardized Whitfield-Resilient construction.

The Whitfield-Resilient construction is, basically, a unique adaptation of the cross-plank floor principle, combined with an unusually flexible and strong method of framing the post-and-bow assemblies. Adaptable to practically any chassis.

This framing, with the window rail and seat ribbon members, forms an exceptionally light, resilient skeleton that has great strength and durability, which can be built very economically and which practically obviates trouble from joints opening, screws pulling, etc.

The Haskelite Roof, and the Fabrikoid and Duco exterior finish are other important items that contribute toward low upkeep costs.

Dealers—Whitfield economy and comfort mean better business and a bigger net profit percentage. Let us send you details.

**Whitfield & Sons, Inc., Penn Yan, New York**

De Luxe  
Pay-Enter  
Standard  
Pay Enter

**WHITFIELD**  
RESILIENT  
**BUS BODIES**

De Luxe  
Sedan  
Special  
Bodies

# Mighty Hard to Sell Any Other Hoist Around Here!

**SHIGLEY-TRUE MOTOR CO.**  
GENERAL REPAIRING AND REBUILDING

BARTLESVILLE, OKLA.

Columbian Steel Tank Co.,  
Kansas City, Mo.  
Gentlemen:

Answering your letter of the 25th as to whether the Columbian Lightning Hand Hoists are giving satisfaction, we wish to say we have never heard one of our customers complain about them, and it would be mighty hard to sell any other kind of hand hoist around here.

They are simple, strong and durable and there is nothing to get out of order about them. They just dump the load, let it down and go after another with no delay.

Yours Respectfully,  
Shigley-True Motor Co.

By F. E. Pomeroy

FROM the truck dealer's standpoint, the letter above says all there is to say about the Columbian Lightning Hand Hoist.

Dependable. It helps sell the hoist. As Mr. Pomeroy says, "We have never heard one of our customers complain about them!"

Free from trouble, they "stay sold." No wonder it would be "mighty hard to sell any other kind of hand hoist around here!"

Sell the job complete. It's easier. And there's a profit in this hoist that makes it pay. Write today for our plan. You may have a dump job to quote on tomorrow.

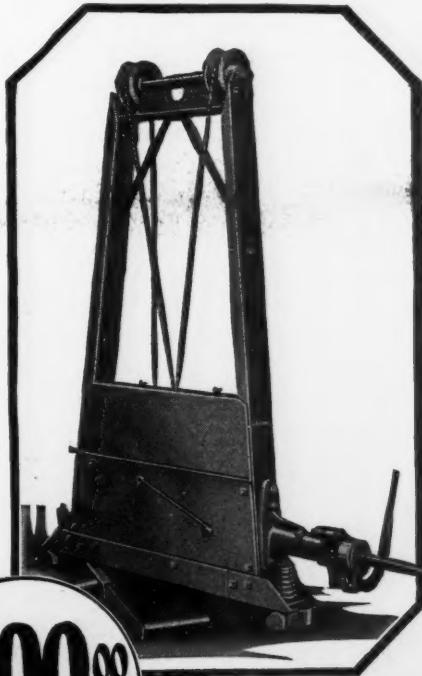
**COLUMBIAN STEEL TANK COMPANY**  
1607 West 12th Street  
Kansas City, U. S. A.

**COLUMBIA**  
Lightning Hand Hoists

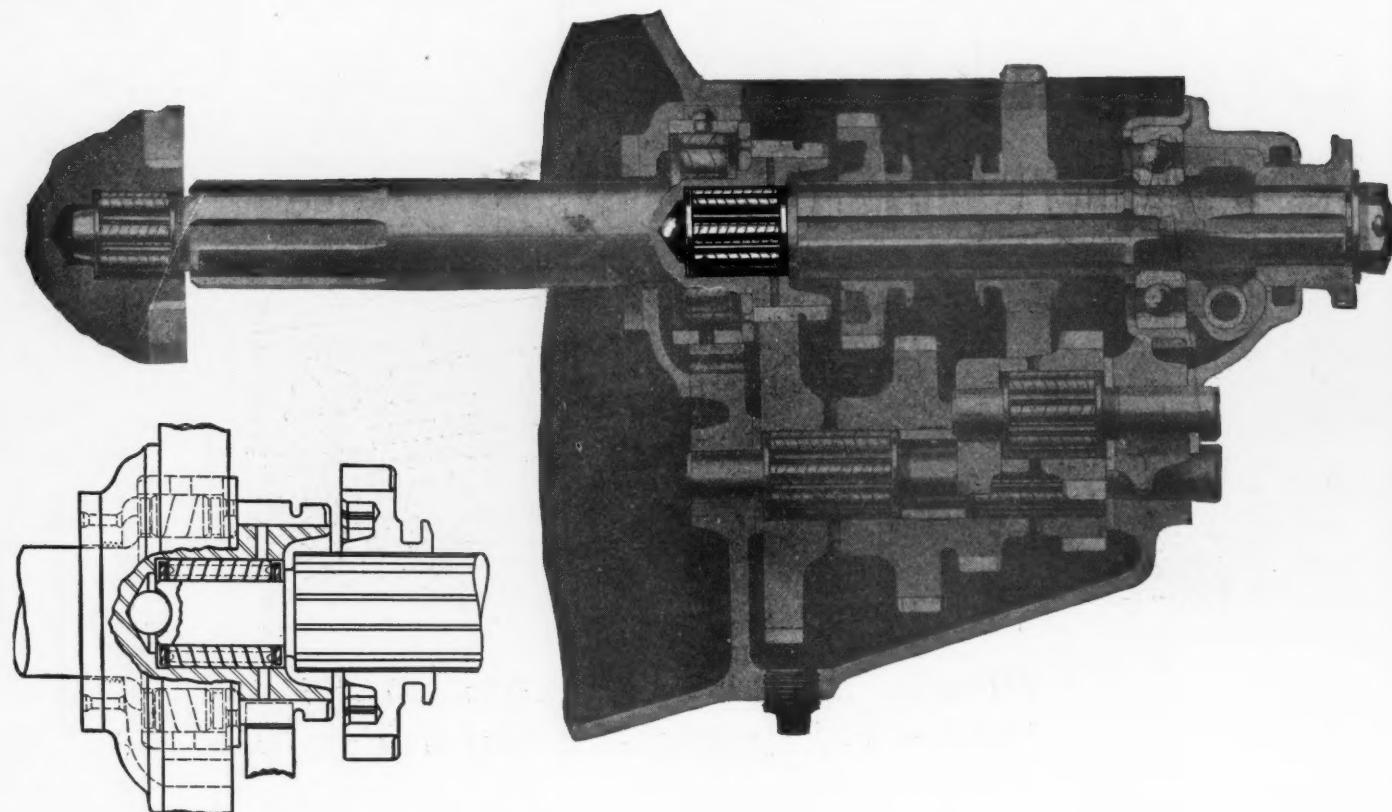


**\$100.00**  
F.O.B.  
KANSAS CITY

CAPACITY  
5 TONS  
OR MORE



Dump Bodies; Steel  
Commercial Bodies;  
Truck Tanks; Under-  
ground Tanks; Pumps;  
Barrels; Buckets; Fun-  
nels; Carrying Cans;  
Portable Buildings;  
Plates; Sheets; Angles,  
Etc.



## Higher Quality Transmissions at Low Cost No. 2 *In the Pocket Position*

Hyatt bearings, with their durability and lubrication advantages, are ideal for the pocket position. Their use insures higher quality transmissions that will eliminate costly service charges.

Plain pocket bushings wear rapidly, rattle and have to be replaced. Hyatt bearings save this expense for their wear is negligible and they seldom, if ever, need to be replaced.

In renewing a plain pocket bushing, it is very essential that it be accurately reamed to size to receive the end of the main shaft. This is a difficult operation and few garages are equipped to do it. It must be carefully and skillfully done or wear and noise will develop rapidly. In the few cases where Hyatt bearings have to be renewed the installation is extremely simple.

The pocket position in a transmission is, of course, hard to lubricate at best. In cold weather, when the oil is stiff, plain bushings are often scored before the lubricant can begin to circulate. This causes premature wear, looseness and noise. Hyatt bearings, on the other hand, can operate temporarily without lubricant and be in no danger of wearing. They will continue to run just as quietly and efficiently after operating under such adverse conditions as they did before.

Hyatt bearings are carefree bearings. In the pocket position of a transmission they need no attention, but will continue to function quietly and with lasting satisfaction for years. Install them for dependable, quiet transmission performance.

**HYATT ROLLER BEARING COMPANY**  
NEWARK DETROIT CHICAGO SAN FRANCISCO

MILWAUKEE WORCESTER CLEVELAND PITTSBURGH PHILADELPHIA

**HYATT**  
*Quiet*  
**Roller Bearings**



Method used by the SCHACHT dealer at Newark, N. J., in driving trucks overland from the SCHACHT factory. Exceptionally good results are obtained by driving trucks through in this manner.

## *Profits and Permanence Make the Schacht Franchise a Valuable Asset*

The manufacture of only the very highest type of vehicles to meet the commercial requirements has always been the policy of The G. A. Schacht Motor Truck Co. This accounts for the unusual user good-will enjoyed by SCHACHT Dealers and permanence of the SCHACHT franchise from a profit building standpoint.

SCHACHT trucks are years ahead of other trucks in scientific engineering and mechanical improvement. The SCHACHT TEN SPEED transmission—acknowledged by users to be one of the greatest contributions of science to the advancement of truck operating efficiency is only one of many exclusive features in the SCHACHT truck that give the dealer a powerful sales advantage and a consistent repeat business from satisfied owners. Congenial relations with the factory, as well as close sales and advertising co-operation, insure absolute success to the aggressive type of truck merchandiser, capable of putting forth the necessary effort to supply the ever increasing demand for better truck transportation.

The SCHACHT truck offers a complete line of commercial vehicles ranging in size from 1 to 7 tons, as well as a bus chassis—THE SCHACHT SUPER SAFETY SIX with Westinghouse Air Brakes on all four wheels. If you have not yet investigated the SCHACHT franchise—by all means *do it today*.

Write or wire—

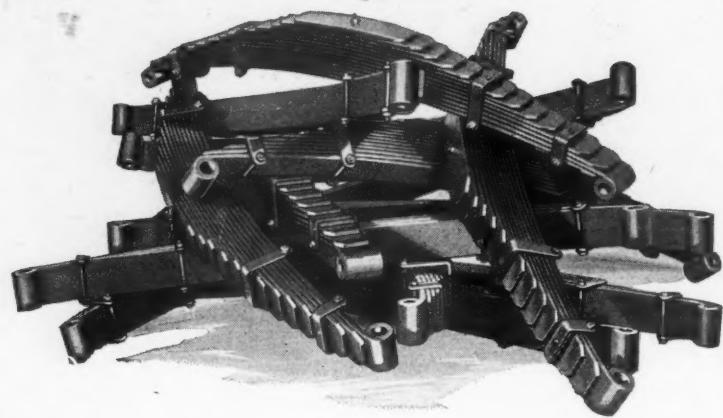
1, 1½, 2, 2½, 3, 4, 5 and 7 Ton Capacities

**The G. A. Schacht Motor Truck Co.**

8th and Evans Streets, Cincinnati, Ohio

New York Branch: 220-228 13th St., Long Island City

# **SCHACHT Ten Speed TRUCKS**

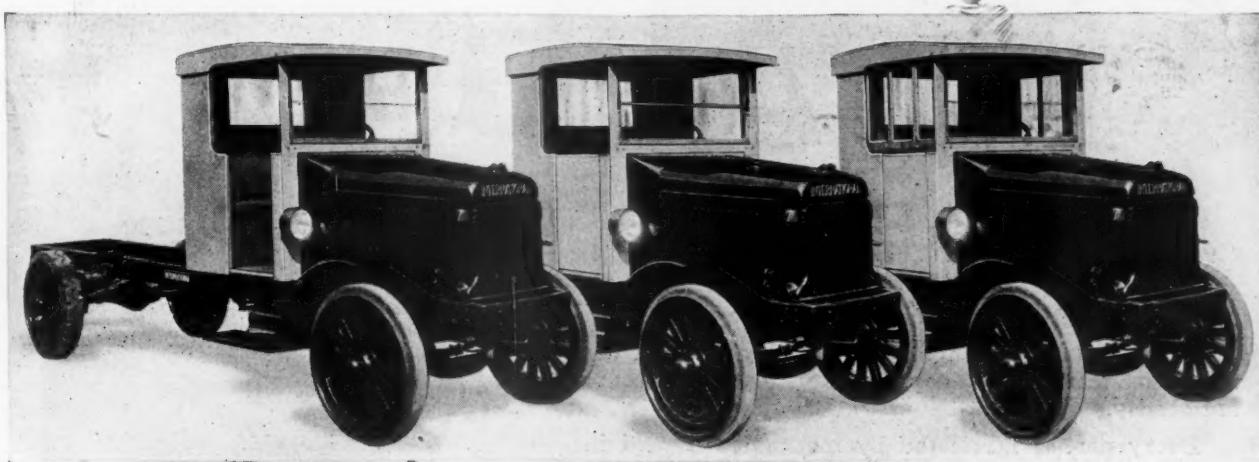


THE SPRING IS THE THING

# Mather Springs Scientifically Heat Treated

The  
Mather Spring Co.  
Toledo~Ohio.

# MATHER SPRINGS



## HIGHLAND CABS

Help reduce the number of traffic accidents by giving the driver clear vision and perfect freedom of action.

Heavy slam and hinge pillars found in most closed cabs HIDE A COMPLETE CAR TWO SECONDS AWAY.

Highland cabs are designed with doors arm high that slide into pockets beside the driver's seat and windows independent of the doors, that slide and fold as they open.

See Highland cabs at the following exhibits this fall—

Dairy Show, Milwaukee  
Petroleum Congress, Tulsa

Bottlers' Show, Louisville  
Transportation Show, Chicago

*Send for Bulletins and List of Distributors*

**THE HIGHLAND BODY MANUFACTURING COMPANY**  
403 ELMWOOD PLACE CINCINNATI, OHIO

## Our Live Dealers are Making Money.

One Dealer in a city of 40,000 has sold 29 this year so far, every sale a profit, and has a comfortable Surplus Now.

Because  
We have a  
Successful  
Dealer  
Sales Plan



Service  
is the  
Foundation  
of all  
Success

Our Line fits every business

**Gramm-Bernstein Truck Corp.**

Our 24th Year

LIMA, OHIO

Finance

# TEAGLE

## RELIABILITY

The Teagle Magneto has been designed for constant service under the most severe conditions.

All materials entering into the construction of the magneto are carefully inspected and tested to secure uniformity.

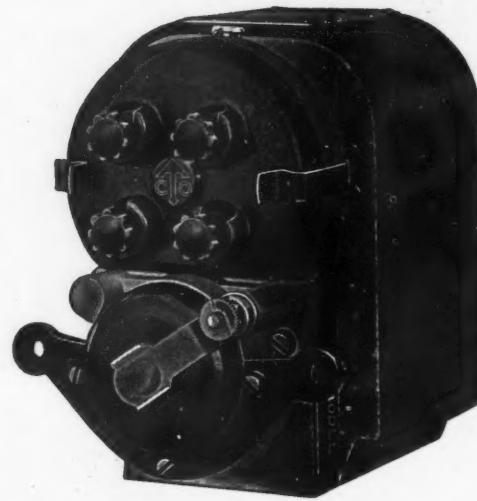
Every part is fabricated by mechanics trained in their particular class of work.

Each part is gauged by expert inspectors during the process of production.

Reliable performance is the result of carefully planned manufacturing.

Specify Teagle Magneto.

THE TEAGLE COMPANY  
CLEVELAND, OHIO



 "The Simplest Magneto of Them All" 

A New Source of Profit—  
Replace Truck and Bus Valves With

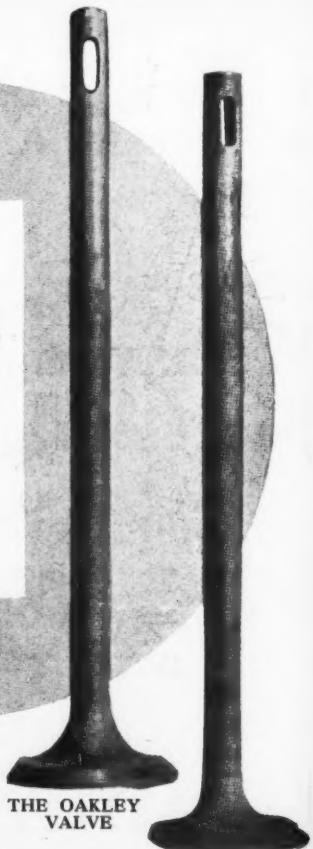
# OAKLEY MONEL METAL VALVES

One-Piece Drop-Forged

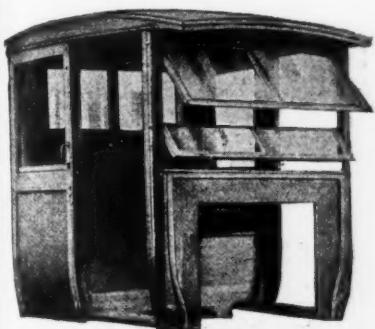
Install Oakley Valves in your customers' buses and trucks. Save them gasoline and reduce repair bills. Why not equip your truck?

Write us for proposition.

The Oakley Valve Co., of Conn., Inc.  
SHELTON CONNECTICUT



AN ALLOY  
STEEL VALVE



### Beware of Imitators!

The skill and experience built into the original "Rain or Shine" Truck Cab cannot be duplicated.

#### RAIN OR SHINE CAB *Unqualified Guarantee*

The General Woodwork Corporation unqualifiedly guarantees to replace any RAIN OR SHINE CAB that does not hold up in service.

#### Body Equipment

The General Woodwork Corporation is in position to furnish complete body equipment, and full information regarding Express Bodies, etc., will gladly be furnished on request.

## Absorbs Torsion and Vibration

Rain or Shine are FLEXIBLE—just enough to relieve joints of undue strain and prevent their loosening. The strength and durability of the cab is enormously increased and it continues to be a weather-tight, comfortable cab for the life of the truck.

Rain or Shine Cabs are non-conductors of heat—warm in winter, cool in summer. They open up on all sides or enclose completely. The doors are large, the space well proportioned, the seat comfortable and a clear view in all directions provides safety.

Truck Manufacturers use the high reputation and attractive appearance of Rain or Shine Cabs to promote their sales. Body Builders and Distributors find them fast and profitable business builders.

*Write Today for Full Information*

THE GENERAL WOODWORK CORPORATION  
Cincinnati, Ohio



# DIXON'S 677

*For Transmissions and Differentials*



Dixon's 677 may be obtained in steel drums with pump, providing a quick, clean means of lubricating gear boxes. A necessity in every garage and service station. Write for quotations.

The gear teeth in truck or transmission and differential need constant lubrication. And it is the difficult job of a lubricant to stay on these teeth under the pressure of load—and when the gears are idle. Dixon's 677 knows its place and stays there. It sticks to the gears like a part of the surface—and remains under the two extremes—pressure and idleness.

When the car gets under way there is no grinding of metal on metal because 677 having stuck to the gear teeth is in its place, *lubricating*, as the gears start. Write for Booklet 112-G.

JOSEPH DIXON CRUCIBLE COMPANY

Jersey City, N. J., U. S. A.



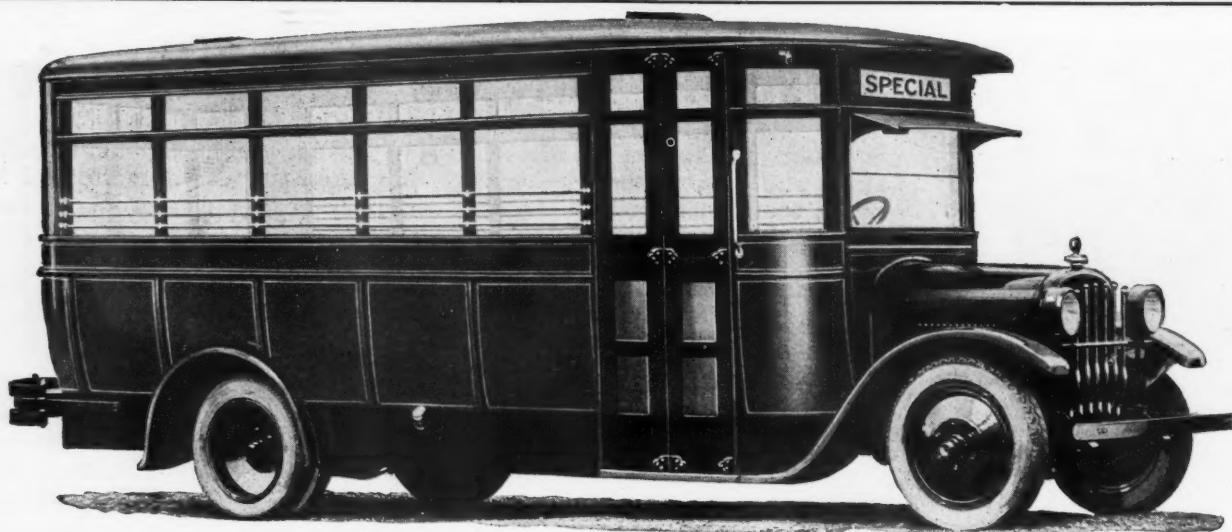
Established 1827

MAKERS OF QUALITY LUBRICANTS

For Spur and Bevel Gears Use Dixon's Gear Lubricant No. 677

For Worm Drives Use Dixon's Gear Oil No. 675

For Universal Joints Use Dixon's Grease No. 672



# Weatherproof

The exceptionally long, low appearance of this new Weatherproof Pay-enter Body has brought it into immediate popularity. It has already been adopted as standard equipment by leading truck makers, distributors and traction companies. Send for complete specifications and price.

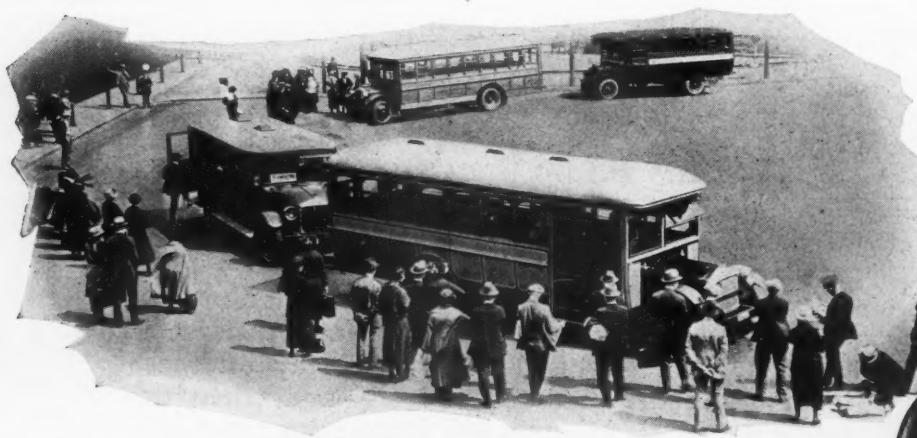
## WEATHERPROOF BODY CORPORATION

438 Shiawassee Street

CORUNNA

MICHIGAN

*Builders of Pay-Enter, Sedan and Tour-a-Bus Bodies. Also Truck Cabs, Commercial and Passenger Bodies*



*The Camden County  
Bus  
Association  
Uses  
The PETRY*

### Some Other Users

Boston Body Co.  
J. G. Brill Co.  
Champion Auto Equipment Co.  
Consolidated Body Co.  
Edwards Railway Motor Car Company.  
Fifth Avenue Coach Co.  
Fremont Metal Body Co.  
Garford Motor Truck Co.  
General Motors Truck Co.  
Hahn Motor Truck Co., Inc.

Hampstead Mill and Body Works.  
International Harvester Co.  
International Motor Co.  
G. C. Kuhlman Car Co.  
Niagara Motor Boat Co.  
Paterson Vehicle Co.  
Pioneer Auto Works.  
Union Motor Truck Co.  
Wiener Auto Body Co.  
Yellow Coach Manufacturing Co.

### N. A. PETRY COMPANY, Inc.

324 North Randolph St.

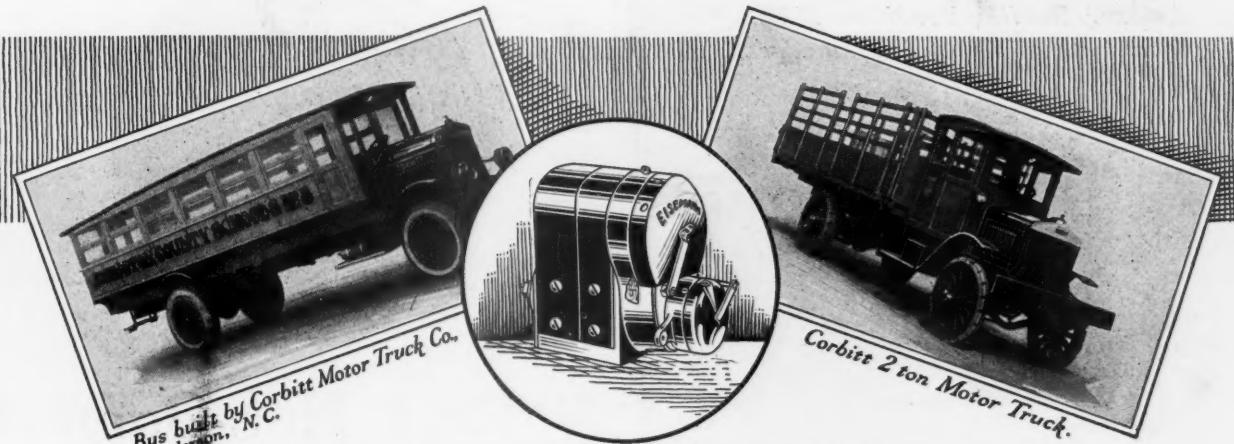
Philadelphia, Pa.

Pacific Coast Representative: Norman Cowan Co.  
451 Rialto Bldg., San Francisco



Type No. 210

**PETRY** *Heater and  
Tuning-Up* **Valve**



## ANOTHER EISEMANN USER

Long, continuous use of an ignition system by a motor truck manufacturer usually signifies satisfaction all along the line. Dealers and truck buyers are seldom hesitant or backward in notifying the manufacturer of their displeasure with

a faulty ignition system. The Corbitt Motor Truck Company, Henderson, N. C., users of quality units, many years ago adopted EISEMANN magnetos as standard equipment and report entire satisfaction.

**EISEMANN MAGNETO CORPORATION**

WM. N. SHAW, President  
General Offices, 165 Broadway, N. Y.



# E I S E M A N N



**Oshkosh 4-Wheel Drive Truck Equipment for the Lumber Dealer is the Most Economical, Because:**

- 1st: It can go through soft yards easily.
- 2nd: It delivers the load where it is needed even if the ground is soft and slippery.
- 3rd: It is rapid in travel, assuring more trips per day.
- 4th: Handles easily and is safer to drive because it has both power and brakes on all four wheels.
- 5th: It is very economical in upkeep.

Made in following sizes: 2-ton, 2½-ton, 4-ton.

Dealers wanted. Write today.

# OSHKOSH MOTOR TRUCK MFG. CO.

Oshkosh, Wisconsin, U. S. A.

*Another Leading Truck on Which  
Weatherproof Cabs Are Standard*



# Atterbury AND Weatherproof

The new standardized Weather-proof Truck Cab has been adopted as standard equipment for the New Atterbury Highway Express. This combination brings to the truck users of the country a degree of reliability and efficiency that would be exceedingly difficult to equal.

Feature by feature, the specifications of both the cab and the chassis will be a welcome surprise to those who carefully analyze the "life cost" as well as the "first cost."

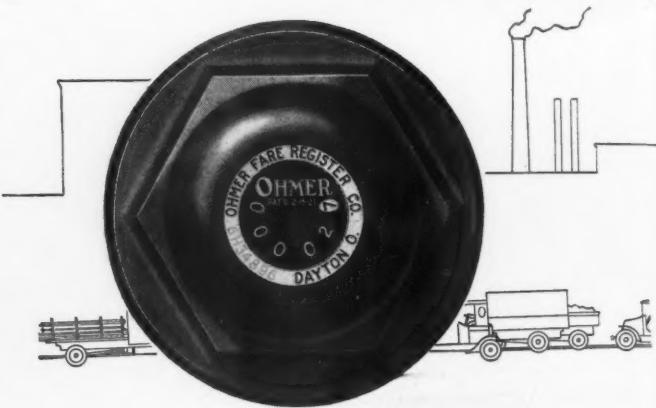
Inquiries from truck makers, dealers and users will be fully and promptly answered.

# Weatherproof

## Weatherproof Body Corporation

438 Shiawassee Street  
**Corunna Michigan**

**Builders of Truck Cabs, Bus Bodies, Automobile Tops, Passenger and Commercial Bodies**



## A Real Hub-Odometer

**A**N accurate knowledge of mileage takes all uncertainty out of truck operation. And now you can secure this knowledge at a ridiculously low cost.

Take off a hub cap and simply replace it with an Ohmer Hub-Odometer. It always registers accurately all mileage, whether the truck is running forward or backward. Records up to 100,000 miles in miles and tenth miles, then starts over again.

The figures on the dial are always right side up, regardless of the position of the wheel. Errors in reading, therefore, are practically impossible.

The Ohmer Hub-Odometer should be on for the life of the truck. There is no drive to get out of order—no drive shaft to break.

The Ohmer Hub-Odometer is made for all standard makes of trucks, including the Ford Truck. The Ford type costs \$15, all other types cost \$20. It will pay its small cost hundreds of times over.

And back of every Ohmer Hub-Odometer is twenty-six years of experience in the manufacture and servicing of the world's best recording devices.

Ohmer Fare Registers and Ohmer Fare Boxes for street cars, interurbans, and motor buses. Ohmer Printing Taximeters, Atco and Atcograph Taximeters for taxicab service. Ohmer Truck Auditors, Ohmer Dash-O-Meters and Ohmer Hub-Odometers for motor trucks.

*Write to us for descriptive material  
and for the name of your nearest dealer*

**OHMER FARE REGISTER COMPANY**  
DAYTON, OHIO, U. S. A.

# OHMER

HUB ODOMETER

*The First Selden—1877*

THE steady, consistent demand for Selden Trucks, due to the excellent service they have given over a long period of years in all lines of business, is conclusive evidence that the "In-Built Quality" product and the honest and sincere efforts of the Selden Company are appreciated.

We are happy to have earned this confidence and pledge a continuance of the same high-grade product and fair treatment of all Selden owners and dealers.

The addition of the Pacemaker (the 1½ ton speed truck) to our extensive heavy-duty line, gives Selden dealers a model to fit every kind of haulage service.

With the Selden account you can build up a large profitable business. Start now—write us today for details.

**1½, 2, 3, 4, 5-7 Ton Models**

**Selden Motor Trucks**

BUILT IN  
ROCHESTER, N. Y.

# Only One Minute to clean each batch

This advertisement is one of a series based on actual customer requests. No. 10

THEIR production schedule demanded speed. When the cleaning tanks slowed down so that a batch of work took more than one minute to clean—it was too slow.

To get this speed and at the same time to get it economically, they made many tests. They had to find a cleaner that would not only clean fast, but that would keep on cleaning fast for a long time without the bother of making up fresh solutions. Out of their rigid tests they found Oakite materials far the best—at least 50% better than anything else.

In the tests Oakite materials lasted 16 hours and 21 minutes continuous cleaning, and handled 23,385 pounds of work, and at a cost of only .043 hundred pounds.

Compare this with the next best which lasted 8 hours and 30 minutes, or just ½ as long as Oakite, and cleaned only 8,569 pounds, only about 1/3 as much work as Oakite handled, and at a cost 50% higher than that of Oakite.

The third best cleaner in the test lasted only 6 hours and 45 minutes, only about 1/3 as long as Oakite stood up, and cleaned only 6,383 pounds of work, a little more than a quarter as much as Oakite cleaned, and the cost here was also 50% higher than the cost of Oakite.

Volume production calls for quick cleaning. Oakite materials are favored in plants where such conditions apply because they can be depended upon to give dependable results day in and day out at lowest costs.

Whether your cleaning job is large or small, tough or easy, there are enough good reasons why you should use Oakite materials to make it worth while getting the facts. Our booklet for automotive manufacturers will give you some interesting data that will fit in with your cleaning needs. Free copy upon request.

**There Are 70 Oakite Service Men, Cleaning Specialists, Located at**  
Allentown, Pa.; Atlanta, Ga.; Baltimore, Boston, Bridgeport, \*Brooklyn, Buffalo, Camden, Canton, O.; Charlotte, N. C.; \*Chicago, \*Cincinnati, \*Cleveland, \*Dallas, \*Davenport, Dayton, \*Denver, \*Des Moines, \*Detroit, Erie, Flint, Mich.; Grand Rapids, Harrisburg, Hartford, \*Indianapolis, \*Kansas City, \*Los Angeles, \*Milwaukee, \*Minneapolis, \*Montreal, Newark, New Haven, \*New York, \*Oakland, Cal.; Peoria, Philadelphia, Pittsburgh, \*Portland, Me.; Poughkeepsie, Providence, Reading, Rochester, Rockford, Rock Island; \*St. Louis, \*San Francisco, Schenectady, \*Seattle, Syracuse, Toledo, \*Toronto, Utica, Waterloo, Ia., Williamsport, Pa.; Worcester.

\*Stocks of Oakite materials are carried in these cities

**Oakley Chemical Co. General Offices: 38 Thames St., New York, N.Y.**

**OAKITE**  
Trade-Mark Reg. U. S. Pat. Off.  
**Industrial Cleaning Materials**

# 2 minutes! No Tools —No Jack— Two Minutes' Time

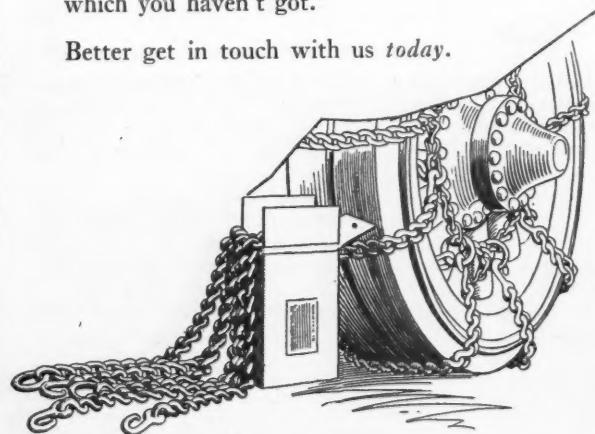
Big fleet owners are the biggest buyers of NACESKID CHAINS. To keep their trucks in commission regardless of weather and roads, and to keep tire and other upkeep expenses down, they have for years depended upon NACESKID CHAINS.

Only the human hands are needed to slip on a set of Naceskids. No tools and no need to jack up the wheel, and as for time—two minutes for each wheel will suffice to put them on.

Once on—they stay. Naceskids cannot get into drive chains or brake drums. They give absolute traction and yet roll just enough to save tires.

A big season is just around the corner. Get stocked now and the good news spread around. Remember, NACESKIDS pull the profits but you cannot sell something which you haven't got.

Better get in touch with us *today*.



## NACESKID Service Chain

*Territory Open Now for 1924-1925 Season*

NACESKID SERVICE CHAIN CO.  
TRENTON, N. J.

# FISK

## TRUCK TIRES

SOLID AND PNEUMATIC

**H**ANDLING Fisk Solids and Pneumatics is like taking out success insurance because Fisks completely meet every truck operator's demands. Every new Fisk sale creates another steady customer.

And truck operators, more than any other class of tire buyers, fully realize the wisdom and economy of buying a tire with a long established reputation for quality and endurance. That is why the Fisk name instantly appeals to them.

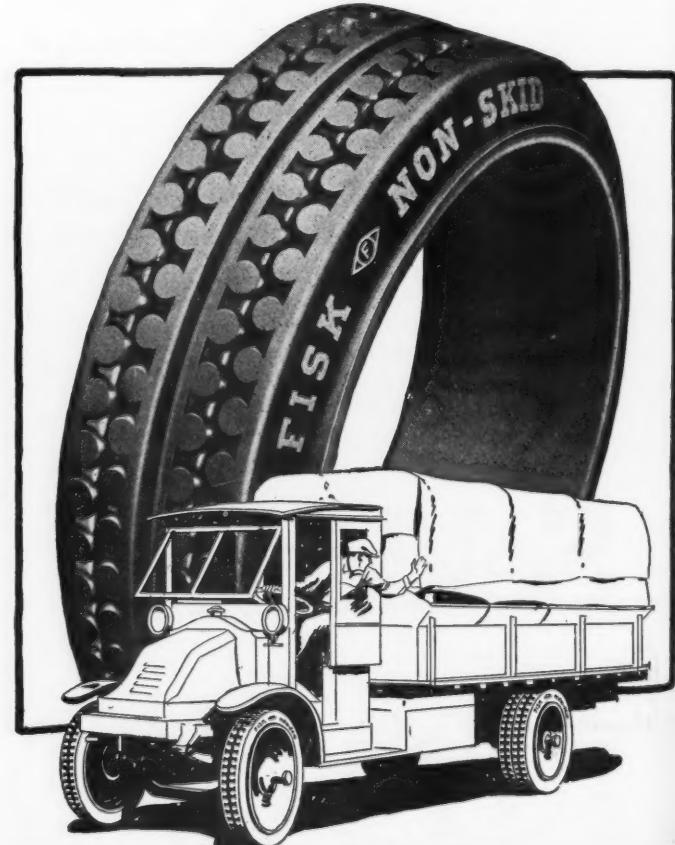
The present Fisk Truck tires have exclusive features which not only make them easier for you to sell but add wonderfully to their already unusual cushioning, traction, and wearing qualities.



Time to Re-tire?  
Get a Fisk

**THE FISK TIRE CO., Inc.**  
CHICOPEE FALLS, MASS.

*The Fisk Truck Tire Franchise is being sought by big service stations everywhere.*



## Healthy Markets—and the Hub Odometer

The man who *knows* what a good truck he has is the one who can check up his cost-per-mile and can see cheap haulage *recorded*.

*He's not much in doubt about value received; not much influenced by temporary troubles with mechanism; not much deceived when faulty driving works injustice on a truck.*

**Veeder**  
HUB ODOMETERS

make satisfied truck-owners by showing—by records—what a good truck *delivers* in service.

Dealers in trucks, and equipment for trucks, make a healthier market for all their goods by selling all the Hub Odometers they possibly can.

REGULAR MODEL (List) \$20.00  
FORD TRUCK MODEL....\$15.00

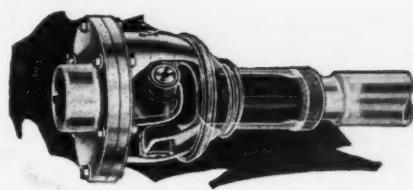
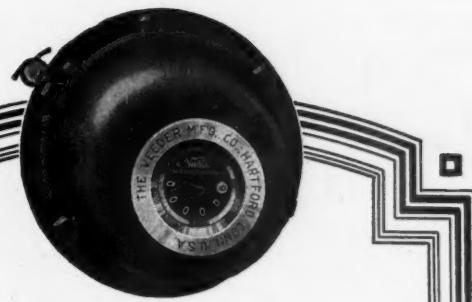
Informative circular on request

The Veeder Mfg. Co.  
10 Sargeant Street Hartford, Conn.

### Sales and Service Stations in

Atlanta, Ga.  
Baltimore, Md.  
Birmingham, Ala.  
Boston, Mass.  
Buffalo, N. Y.  
Chicago, Ill.  
Cincinnati, Ohio  
Cleveland, Ohio  
Denver, Colo.  
Detroit, Mich.  
Indianapolis, Ind.  
Kansas City, Mo.  
Los Angeles, Cal.  
Montreal, Quebec

New Orleans, La.  
New York, N. Y.  
Philadelphia, Pa.  
Pittsburgh, Pa.  
Rochester, N. Y.  
St. Louis, Mo.  
St. Paul, Minn.  
San Francisco, Cal.  
Syracuse, N. Y.  
Tacoma, Wash.  
Toronto, Ontario  
Washington, D. C.  
—and other cities



Correct design,  
plus strength of materials,  
plus fine workmanship

DOZENS of universal joints have been designed these last twenty-one years to challenge the great success of the Spicer Propeller Shaft—the first efficient link between motor and rear axle.

But it takes a vast amount of experience to master all the difficulties of transmitting power through a shaft that constantly changes its length and angles; absorbing punishing blows and running for years though completely neglected.

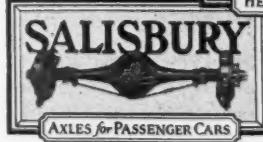
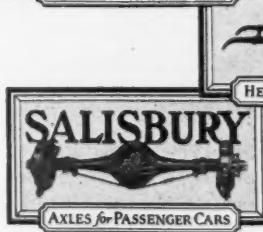
## Spicer Propeller Shafts

are built to a time-tried design that has undergone hundreds of minor refinements. Materials are selected, tested and fabricated under the supervision of specialists whose combined experience in this particular art, could not be found in any other organization in the world.

In soundness of design, strength of materials and precision of workmanship, the Spicer is the *first propeller shaft*—as it always has been.



## Associated **Spicer** Companies



Spicer Manufacturing Corporation, South Plainfield, N. J.

Parish Manufacturing Corporation, Reading, Pa.

Sheldon Axle & Spring Company, Wilkes-Barre, Pa.

Salisbury Axle Company, Jamestown, N. Y.

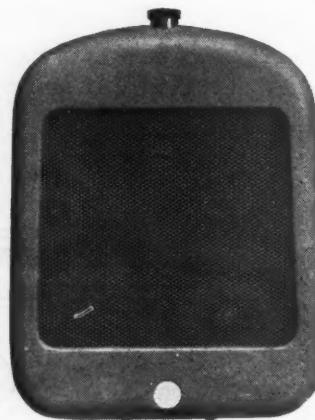
# Bridgeport Trucks

**1½, 2½, 4 and 5-Ton Capacities**

Chassis capable of delivering service to the satisfaction of the most exacting fleet owner—supplied in both truck and bus models at prices that put them among the biggest values on the market today.

**Bridgeport Motor Truck Corporation**  
Bridgeport, Connecticut

**BRIDGEPORT**  
*of Bridgeport*



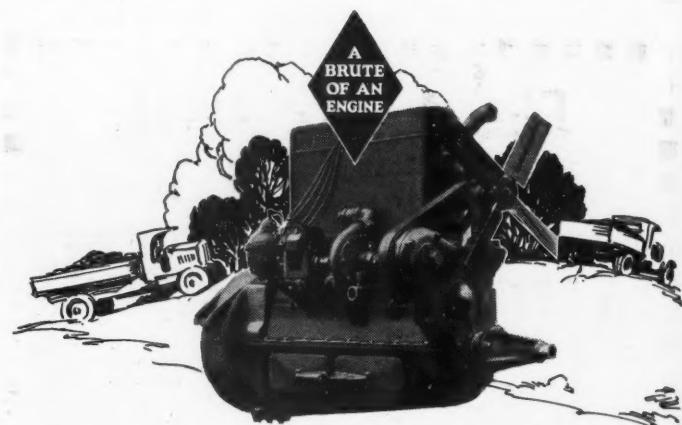
74 manufacturers use Perfex Radiators and Core Units as standard equipment.

## It's as Good as It Looks

Perfex Radiators look good because they are good. Their attractive appearance is the result of careful engineering which designs and builds these sturdy bronze-core radiators for efficient cooling whatever may be the duties of the truck on which it is installed. Estimates without obligation cheerfully furnished from your blue-prints or we will submit a design to meet your special needs.

RACINE RADIATOR CO., Racine, Wis.

**PERFEX**  
THE PERFECT RADIATOR



## Replace the old engine

The truck may be *old*, but it is far from being *through*. A Beaver 4-cylinder *Brute Strength Engine* will make it new again and give its owner another 20,000 miles or more.

The Beaver replacement engine has been priced low for quick sales. We have a number of engines on hand and can make almost immediate shipment. Write us today for our special dealers' arrangement and discount.

Beaver Manufacturing Co., 45-35th St., Milwaukee, Wis.

**FOR STEADY SERVICE**  
**Beaver**

## The U. S. Cushion Tire

MEN long experienced in the operation of commercial cars say they have never before found a tire that so fully meets their needs as the U. S. Cushion Tire.

The exceptional cushioning effect of the hollow core almost equals that of a pneumatic, and at the same time the tire presents a wearing surface that stands up under mile after mile of the most severe usage.

**United States Truck Tires  
are Good Tires**



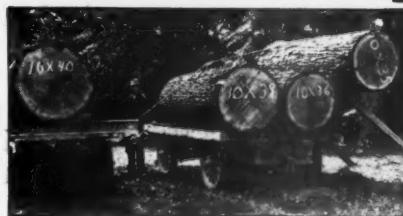
## The Amos Needs Only One Man—

### The AMOS Log Loader

—is a time and labor saver that means big economies for men up against bulky loading jobs.



With one man the AMOS will load a boiler and hold it securely in place.

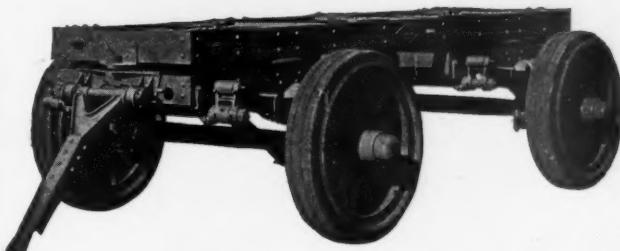


Loading logs on trailers

It will pay you to be the dealer to show them this profit saving device. Write us at once for detailed information and proposition. *Any day a prospect may turn up with a job that needs the AMOS.* Knowing about the AMOS will make it easier and more profitable, to sell him a truck.

**Amos Loader Company**  
Edinburg Indiana

## FRUEHAUF TRAILERS



### Repeat Sales—for Big Profits

A sale of one Fruehauf Trailer is usually followed by a repeat order—which is often a fleet sale.

That of course is due to Fruehauf superior design, exclusive features of construction—and immediate sharp lowering of haulage costs.

Fruehauf Trailer Company is one of the largest and oldest trailer concerns in the United States. It has come thru the trying period of the last two years in a financially sound condition. It is growing steadily—and Fruehauf dealers are growing with it.

Write for the Fruehauf list of "Saving-hauling-costs Fleets," the road-sign to opportunity for the dealer with vision and aggressive sales punch.

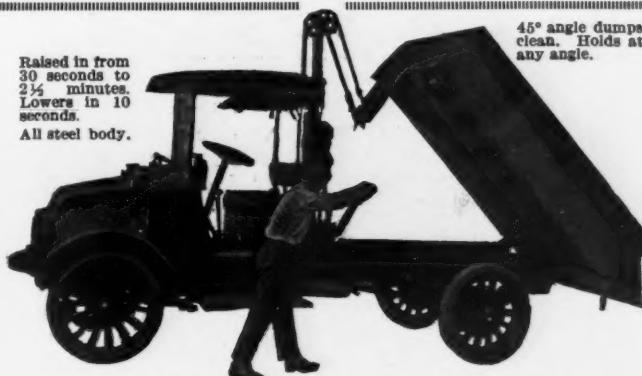
**FRUEHAUF TRAILER COMPANY**  
10921 Harper Ave. Detroit, Mich.

## "NORMA"

BALL BEARINGS



**THE NORMA COMPANY OF AMERICA**  
ANABLE AVE., LONG ISLAND CITY, N.Y.



**You Can Reach Business  
You Couldn't Touch Without  
the ARCHER DUMP BODY  
and HAND HOIST**

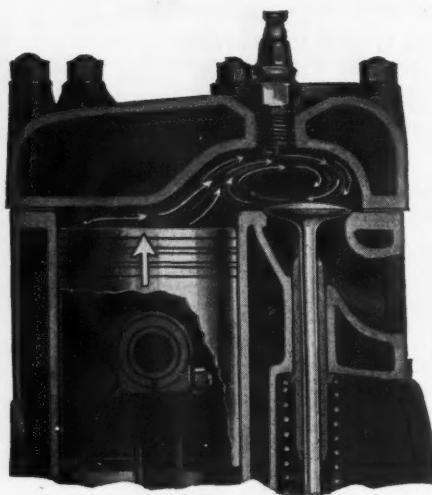
There will always be buyers for this easily operated, dependable and durable hand hoist. Body and hoist together cost no more than a hydraulic hoist alone. Many men won't buy a power-hoist on account of its upkeep. Many have not the capital to put into expensive equipment. In the low-priced truck field, Archer prices decide many truck sales. Write for proposition.

Capacities 1 to 5 tons (1 to 4 yards). Prices, \$225 to \$450, complete. Easily put on.

**ARCHER IRON WORKS**  
Western Avenue and 34th Place  
CHICAGO, ILLINOIS



# The Ricardo Head



Public  
Expectancy  
and  
the Ricardo  
Head

*United States Patent  
granted Nov. 13, 1923,  
to Waukesha Motor  
Company as assignee  
of Harry Ralph  
Ricardo, the English  
scientist.*

Quickly alert to the advantages promised by four-wheel brakes and balloon tires, the car-buying public returned a mass response.

Now, and rightly so, they look for improved engine design. Greater power reserve. Better getaway. Perfect flexibility under all loads and speeds.

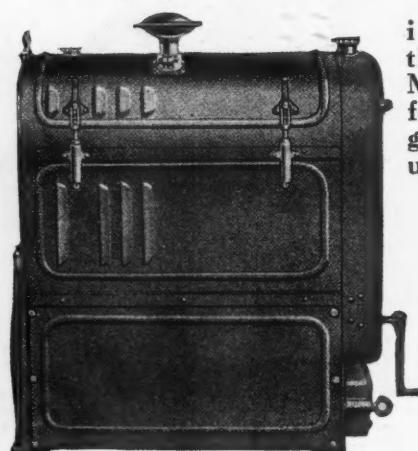
They anticipate improved performance at lower cost and the new standards of ease and certainty the Ricardo Head provides.

Upon a foundation of such compelling advantages, motor car manufacturers and motor car dealers now recognize that the Ricardo Head is destined to add immeasurable sales value to their product.

## THE WAUKESHA MOTOR COMPANY

Engine Builders  
WAUKESHA, WISCONSIN  
NEW YORK, N. Y.

## An A. B. & B. Housing



is used by  
the Hercules  
Motors Corp.  
for their high  
grade power  
unit.

Hercules builds  
to very high  
standards of  
material and  
workmanship,  
and when they  
go outside their  
plant for parts  
they demand  
the same high  
quality.

When Hercules needed a housing to complete this compact power unit, they came to the A. B. & B. Sheet Metal Works for it. They were certain of our ability to turn out a first-class job on schedule time, keep it uniform in all dimensions—and do it at a more reasonable price than equivalent service could be obtained elsewhere.

*We can satisfy you, too. Let us estimate.*

## A. B. & B. SHEET METAL WORKS



Specification  
Service

FOND DU LAC AVENUE AT 33RD ST.  
MILWAUKEE

## TRUCK DEALERS ATTENTION!

DEALER agents are  
wanted for Durabilt  
Steel Truck Cabs.

The design, construction  
and appearance of Durabilt  
Cabs meets the approval of  
truck buyers and truck  
drivers.



Reg. U. S. Pat. Off.  
Steel Cabs

Closed car comfort is af-  
forded drivers both winter  
and summer.

Write for detailed descrip-  
tion of Durabilt Cabs and  
dealer proposition.

## Sheet Steel Products Company Chicago

Detroit Office:  
Donovan Bldg.      Railway Exchange

Plant:  
Michigan City, Ind.

## Recommend

THE

## Motor Transport Standard Cost System

TO YOUR CUSTOMERS

It is a simple but efficient method of keeping track of costs in the operation of motor trucks.

Only two forms are used—a driver's daily route card and a monthly summary sheet.

The complete system consists of

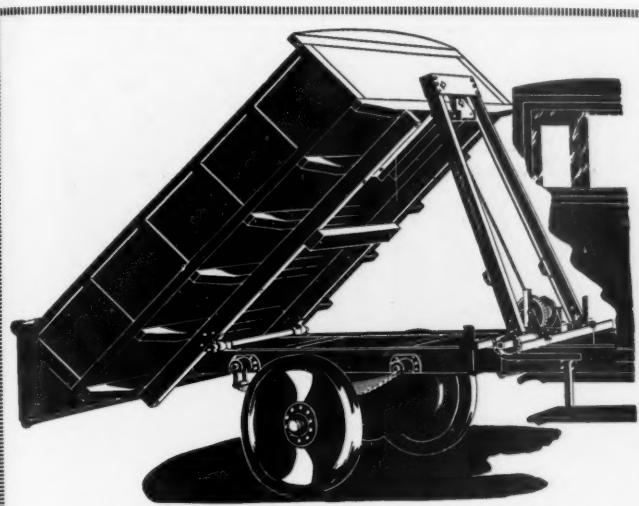
500 Driver's Cards	60 Monthly Summary Sheets	1 Complete Instruction Book	1 Binder	PRICE
				\$9.50

Sample forms and information sent on request.

## CHILTON COMPANY

Chestnut and 56th Sts.

Philadelphia, Pa.



## ROCK HAND HOIST

A well-designed and carefully built, simple, practical hand hoist for dump bodies up to 3½ tons capacity.

Cut gears are used on the winch.

Can be mounted on any width of chassis without change.

No holes required in truck frame for mounting hoist.

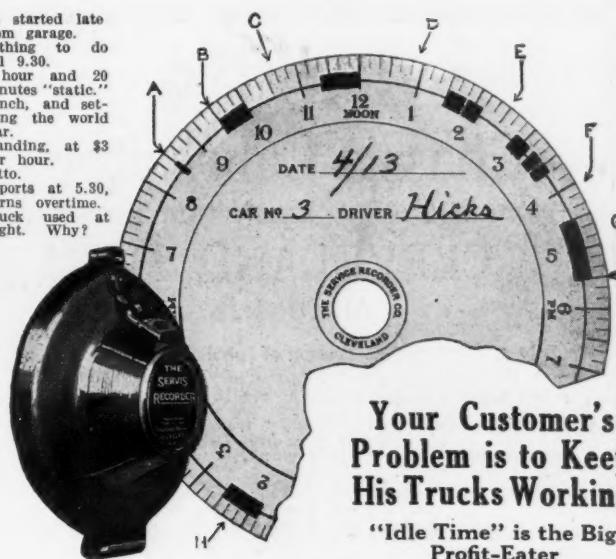
Occupies but 9" space back of cab.

Dumping angle from 35° to 45°.

PRICE, With Body Hinge, \$85.00  
Without Hinge, \$75.00

ROCK MANUFACTURING CO., Waterloo, N. Y.

- A—Got started late from garage.
- B—Nothing to do till 9.30.
- C—1 hour and 20 minutes "static."
- D—Lunch, and setting the world war.
- E—Standing, at \$3 per hour.
- F—Ditto.
- G—Reports at 5.30, earns overtime.
- H—Truck used at night. Why?



Your Customer's  
Problem is to Keep  
His Trucks Working

"Idle Time" is the Big  
Profit-Eater

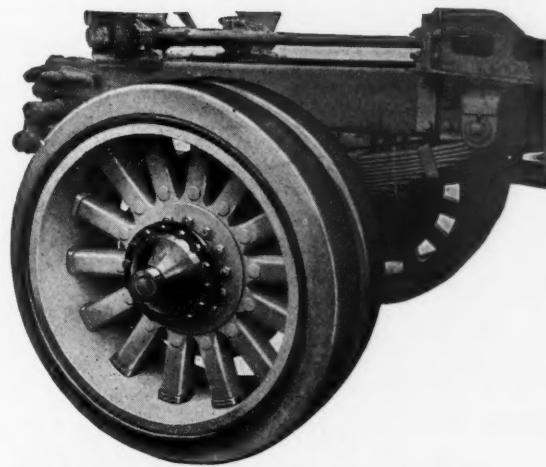
Sell your customer truck service, as well as a truck. SERVICE for a truck is, in the last analysis, full running time. Idle time isn't due mostly to accidents or repairs. A big percent of it can be prevented.

No matter what the cause of unproductive time, there is an "eagle-eyed" simple little truck device you can fasten to the truck that records on a daily chart every minute the truck isn't moving.

Its name is THE SERVIS RECORDER. It prevents abuse and misuse. It will save your customer money every day. And—it will help you make more sales through satisfied users. Write for BOOKLET A.

THE SERVICE RECORDER CO. Cleveland, Ohio

## THE HOOPES METAL FELLOE WHEEL

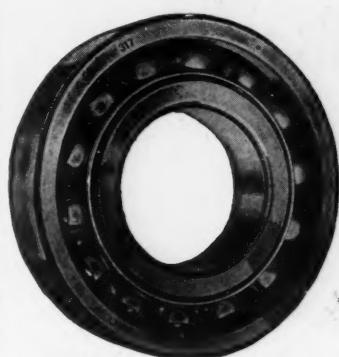


A wood spoke, metal felloe truck wheel which has *Strength, Light Weight and Resiliency*. Standard equipment on leading makes of trucks.

*Send for Descriptive Literature*

HOOPES, BRO. & DARLINGTON, Inc.  
WEST CHESTER, PA.

## GURNEY BALL BEARINGS



It pays to use Gurney Ball Bearings, both for original installations and for replacement work.

A much greater overload capacity is obtained as Gurney Bearings have the largest and greatest number of balls in any bearing of like size. Concaved raceways of the most precise fit further increase the bearing surface.

Both radial and thrust loads are combined into one compact bearing, saving space, labor and cost of separate bearings for each purpose.

Marlin-Rockwell Corp.  
402 CHANDLER ST.  
JAMESTOWN, N. Y.

**BOWEN**  
**Chassis Lubricator**  
*Now Standard Equipment on the*  
**CLEVELAND SIX**  
 All Models

**A**N AUTOMATIC system of lubrication that enables the owner to perfectly oil every chassis bearing in a few seconds without leaving the driver's seat.

It banishes forever that old familiar bugbear—dirty, ineffective, makeshift lubrication. No more disagreeable, messy job filling grease or oil guns or similar devices and tediously applying to each bearing in turn.

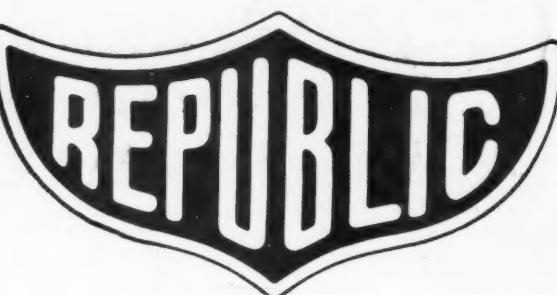
**ONE SHOT  
 DOES IT ALL**

A mere pressure of the foot on the lubricator button—projecting up through the floor boards—and every chassis bearing is automatically and simultaneously flooded with a shot of oil forced in under heavy pressure.

The volume of oil forced into each bearing is measured—one drop or a teaspoonful according to exact requirements, insuring adequate and perfect lubrication without waste.

Manufactured by

**Bowen Products Corporation**  
 Auburn, New York  
 For All Motor Cars and Trucks



*More Trucks in Use  
 than any other Exclusive Truck Builder*

**REPUBLIC**  
*Yellow Chassis* **TRUCKS**

REPUBLIC MOTOR TRUCK CO., INC., Alma, Michigan

**COUNTERBALANCED  
 PARK  
 CRANKSHAFTS**

Patented July 10, 1917



We have  
 shipped 148,253  
 Counterbalanced  
 Crankshafts up to  
 July 30, 1924.

**THE PARK  
 DROP FORGE  
 COMPANY**  
 Cleveland, Ohio

*Stewart's*  
 ALL PURPOSE STEEL **BODY**

BUILT FOR SERVICE



Quick-Acting Self-Dumper for Ford Trucks  
**DUMPS WITHOUT HOIST**  
 Best and Strongest Body on the Market Today  
 Ready to Mount on FORD Chassis

Price \$148.00 F. O. B. Cincinnati, Ohio  
*Liberal Discount to Dealers*

**THE STEWART IRON WORKS CO.**  
 Incorporated  
 CINCINNATI, OHIO COVINGTON, KY.



## Repairs Will Take Less Time *The W. S. M. Engine*

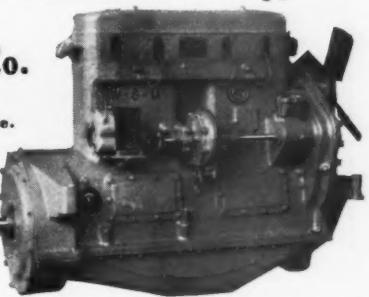
is designed for speedy low-cost repair. Its replaceable cylinder walls make regrinding, and the fitting of oversize rings and pistons unnecessary.

The accessibility of the connecting rods and pistons from above or below is another time-saving feature, as is the unit cylinder-head and valve construction, which simplifies valve reconditioning.

These and many other special features make the sturdy, powerful W. S. M. Engine the ideal equipment for a truck. A careful study of W. S. M. specifications will pay you.

*Send today for details.*

**The Wellman-  
Seaver-Morgan Co.**  
Cleveland, Ohio  
New York City, 522 Fifth Ave.  
San Francisco,  
Rialto Bldg.  
Birmingham, Ala.,  
1018 American Trust Bldg.

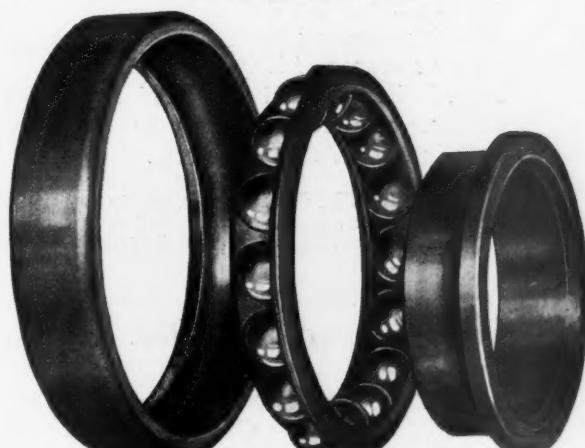


### Angular Contact Radial Bearings Angular Contact Thrust Bearings Thrust Ball Bearings

Made to the Blueprints and Dimensions  
Required by Customers

"Star" Ball Retainers for Thrust, Magneto  
and Cup and Cone Bearings

**The Bearings Company of America**  
LANCASTER, PA.



Western Sales Office:  
1012 Ford Bldg., Detroit, Mich.

*The New*

## BETHLEHEM

**THE NEW BETHLEHEM**  
has everything the highest  
priced trucks have, but  
nothing in it is found in a  
cheaper truck.

Howard B. Hall,  
President,  
Bethlehem Motors  
Corporation of N. Y.,  
Allentown, Pa.

## VOLTAGE REGULATION

An OUTSTANDING IMPROVEMENT  
in MOTOR BUS LIGHTING

Voltage Regulation is the modern electrical generating system for the modern motor bus.

The Leece-Neville system of Voltage Regulation has been adopted as the standard of the foremost bus and motor rail car builders.

Voltage Regulation gives the motor bus a wide range of operating advantages. It is simple, automatic and trouble-proof. It greatly increases the earning capacity of a motor bus.

*Write for Our Booklet "Voltage Regulation"*

LEECE-NEVILLE ELECTRICAL SYSTEMS  
ARE FURNISHED ON THE PRODUCTS OF

The White Company J. G. Brill Car Company  
Mack International Motor Truck Corporation  
The Autocar Company Brockway Motor Truck Co.  
Haynes Automobile Company, and several others





## \$100 Lost Yearly

EACH hour your truck engine "idles" it costs the owner  $1\frac{3}{4}$  gallons of gas—one "idling" hour each day costs him *over \$100 a year*. All this wasted simply because the truck driver naturally lets his engine "idle" to avoid cranking!

Think of the big saving you can offer your customers if your truck has an electric starter equipped with the Bendix Drive!



Eclipse Machine Co., Elmira, N. Y.

Eclipse Machine Company, Ltd.

Walkerville, Ont.

IT is extremely gratifying for us to note that many of America's most successful motor truck manufacturers have specified Brown-Lipe-Chapin products *from the beginning*. Ensuing years have but bound them closer to us.

Manufactured at Syracuse, N. Y.

## BROWN-LIPE-CHAPIN DIFFERENTIALS—BEVEL DRIVE GEARS



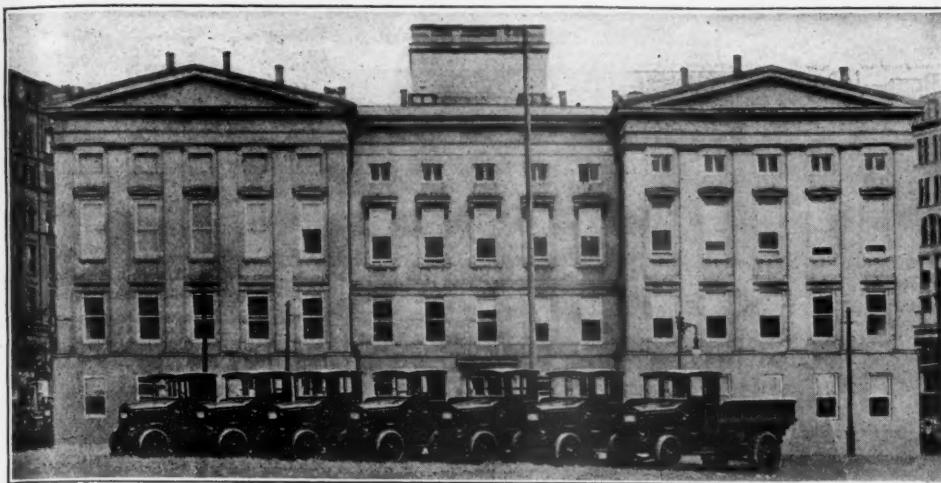
## Are You Open to Conviction?

We ask of you nothing more than an open mind and a willingness to look into any reasonable proposition that may bring you bigger success. If you have these two qualifications, we are ready to show you facts that will convince you that you can build up the same kind of a substantial, steadily-growing motor truck business as scores of Day-Elder dealers have built up. All you need do is send us a letter signifying that you will listen. We'll do the rest.

*Incidentally, if you are open to conviction, you'll never find a better time to write that letter than right now while you are thinking about it.*

DAY-ELDER MOTORS CORPORATION  
NEWARK NEW JERSEY

**DAY-ELDER**  
**WORM-DRIVE MOTOR TRUCKS**



## METROCABS

are specified by discriminating owners. The seven Metro Closed Cabs shown with Borough Hall, Brooklyn, in the background represent a portion of the Metros in use by the City of New York.

**The Metropolitan Body Co.**  
Bridgeport, Conn.

*Manufacturers*  
Closed Cabs      All-Steel Open Cabs  
Combination Dump Bodies



ASK FOR DETAILS

Count the METROS Up Ahead

## The Silent Hoist Company

302-304 McDUGAL ST.

BROOKLYN, N. Y.

**THE PIONEER MANUFACTURERS**  
**COMPLETE LINE OF TRUCK WINCHES AND DERRICKS**

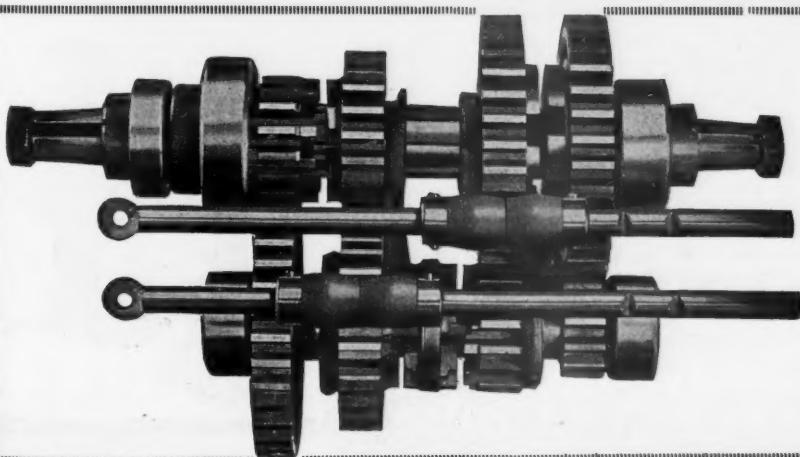
EXCLUSIVE TERRITORIES OPEN TO  
WELL-ESTABLISHED TRUCK EQUIPMENT HOUSES

## WYMAN-GORDON

*The Crankshaft Makers*

Worcester Division  
WORCESTER, MASS.

Ingalls-Shepard Division  
HARVEY, ILL.



## COTTA GEAR CO.

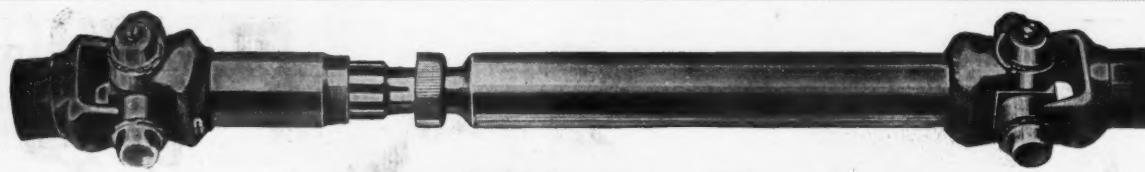
INDIVIDUAL CLUTCH  
TRANSMISSIONS  
FOR

3½, 5 and 7 Ton Trucks

Notice the short, compact and husky  
construction.

Long bearings in the loose gears.

COTTA GEAR CO., Rockford, Ill.



## A Joint Without a Housing

A big argument in favor of Blood-Bros. Universal Joints is that they do not need housings. A housing is bulky and unsightly. It collects dirt, and is an additional source of trouble. The Blood-Bros. joint is compact, easily serviced and leak-proof.

## Blood-Brothers Machine Company

Pioneer Makers of Universal Joints

Detroit Offices: 3-267 General Motors Building

ALLEGAN, MICHIGAN

ACCURATELY  
**DALL**  
MACHINED

## Semi-Steel Replacement Pistons

### Uniform and Permanently Round

Cast from hard, tough, close-grained semi-steel — green-sand-moulded to insure uniformity.

Special heat treatment frees them from internal strains and hard spots, and improves their lubricating qualities.

150,000 pistons in stock. Orders received before 3 p. m., shipped before night.

Write for Price List and Terms



Complete  
Line  
Finished: standard, .003, .005,  
.010, .020, .030,  
.040. On 3 3/4" diam. and over,  
.0625. Semi-finished,  
1/16" (.062) and .080,  
oversize.

## The Dall Motor Parts Company

P. O. Station D  
Cleveland Ohio

## Transmissions for Trucks, Motor Buses and Taxicabs

Heavy-Duty Transmission Units that will match in length of service and economy of upkeep the best vehicle you can build.

Years of service have proved their merit.

Detroit Gear & Machine Co.  
Detroit, Mich.



Light Truck Jack,  
2 1/2-ton capacity.

Geared Jack cuts  
lifting work to 1/3.

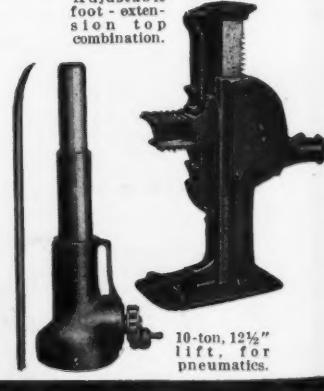
## Buckeye Jacks

*"The Most Complete Line of Jacks in the World"*

Sell Buckeye Jacks Exclusively—There's nothing in the way of jacks that a truck owner can ask for that you cannot duplicate, or better, with a Buckeye. It is sound business to concentrate selling effort on a single complete and up-to-date line. Buckeye quality will insure satisfaction. Take up this matter with BUCKEYE.

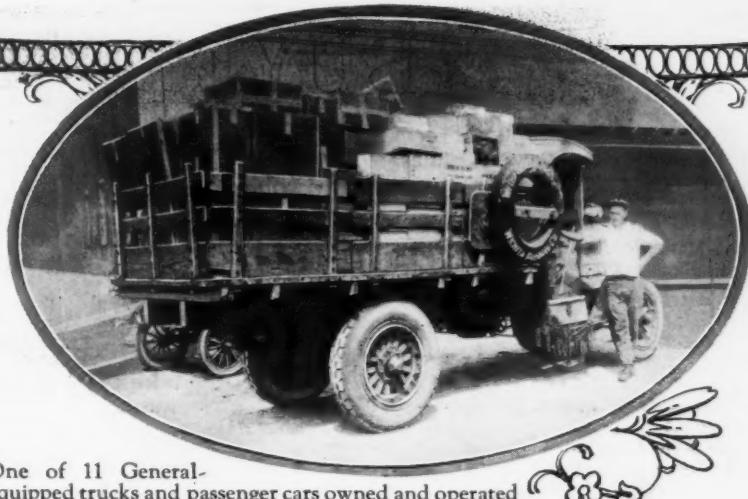
**The Buckeye Jack Mfg. Co.  
ALLIANCE OHIO**

A adjustable  
foot - exten-  
sion top  
combination.

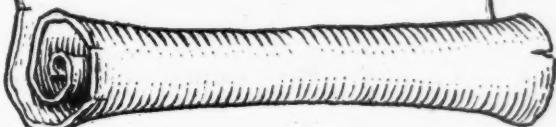


10-ton, 12 1/2" lift, for pneumatics.

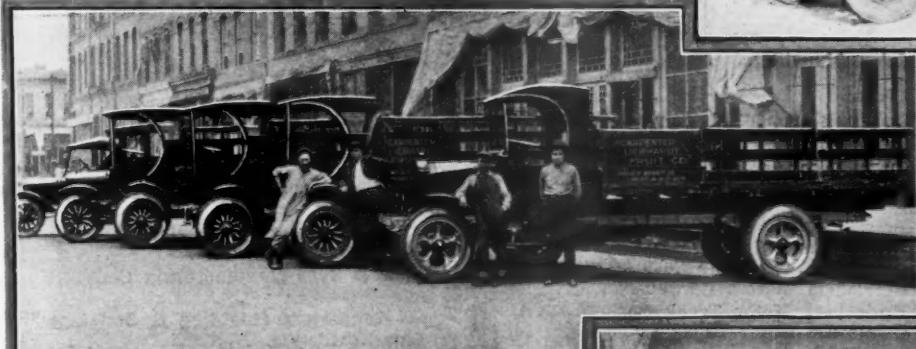
# Produce Fleets Swing to Generals



One of 11 General-equipped trucks and passenger cars owned and operated by Wichita Produce Co., of Wichita Falls, Texas. Makes daily trips through oil fields to small stores—carries very heavy loads over bad roads.



One-and-a-half-ton General-equipped White Truck owned by Edson Bros., produce dealers of Philadelphia. In service between Dock Street warehouse and leading markets. Has 6-inch Generals all around.

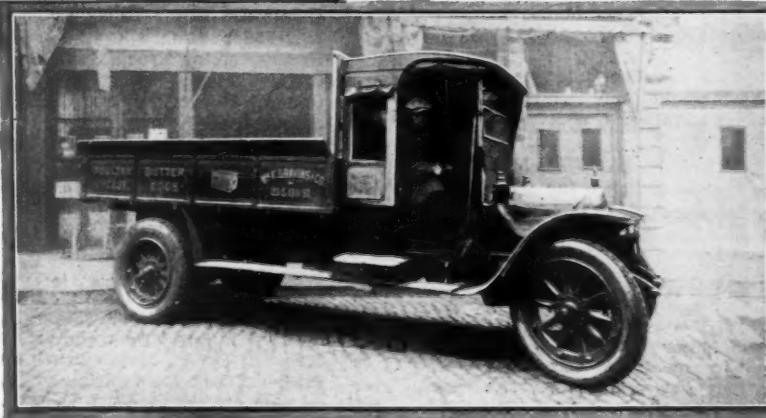


General-equipped fleet of Carpenter-Liebhardt Fruit Co., of Denver. Ninety per cent of their loads average 4½ tons. Rear wheels are equipped with 40 x 8 Generals—front with 36 x 6 Generals.



—goes a long way  
to make friends

General-equipped truck owned by Wm. F. Gravins & Co., of Richmond, Va., who write they are well satisfied with the tire that "goes a long way to make friends."



*The*

# GENERAL

CORD

BUILT IN AKRON, OHIO, BY THE GENERAL TIRE AND RUBBER COMPANY

# BUYERS' INDEX

Acetylene Gas Tank (Lighting)	
Prest-O-Lite Co., The, Inc.	96, 97
Automotive Equipment	
Johns-Manville, Inc.	65, 66, 67, 68
Westinghouse Electric & Manufacturing Co.	110
Axles	
Clark Equipment Co.	Inside Front Cover
Salisbury Axle Co.	123
Sheldon Axle & Spring Co. (Huck Axle Division)	79, 123
Shuler Axle Co., Inc.	62
Timken-Detroit Axle Co.	69
Ball Bearings	
Bearings Co. of America	129
Marlin-Rockwell Corporation	127
New Departure Manufacturing Co.	7
Norma Co. of America	125
Skayef Ball Bearing Co.	2
Strom Ball Bearing Mfg. Co.	109
(Formerly U. S. Ball Bearing Mfg. Co.)	
Ball Retainers	
Bearings Co. of America	129
Batteries	
Prest-O-Lite Co., The, Inc.	96, 97
Bearings & Bushings	
Bearings Co. of America	129
Bodies	
Archer Iron Works	125
Columbian Steel Tank Co.	111
Ditwiler Manufacturing Co.	4
Fitz Gibbon & Crisp, Inc.	103
Heil Co.	63
Hydraulic Hoist Mfg. Co.	139
Metropolitan Body Co.	131
Stewart Iron Works Co.	128
Van Dorn Iron Works Co.	
Inside Back Cover	
Weatherproof Body Corporation	118, 120
Whitfield & Sons, Inc.	108
Wood Hydraulic Hoist & Body Co.	100
Body Material	
Pantasote Co.	77
Brake Linings	
Johns-Manville, Inc.	65, 66, 67, 68
Thermoid Rubber Co.	85, 86
Bus Bodies	
Fitz Gibbon & Crisp, Inc.	103
Weatherproof Body Corporation	118, 120
Whitefield & Sons, Inc.	108
Buses	
Commerce Motor Truck Co.	136
Garford Motor Truck Co.	57
Mason Motor Truck Co.	91
Pierce-Arrow Motor Car Co.	78
Reo Motor Car Co.	Front Cover
White Co., The	105
Bus Seats	
Hale-Kilburn Co.	60
Heywood-Wakefield Co.	130
Cabs	
General Woodwork Corporation	117
Highland Body Manufacturing Co.	115
Metropolitan Body Co.	131
Sheet Steel Products Co.	126
Stewart Iron Works Co.	128
Weatherproof Body Corporation	118, 120

This is NOT an index of what manufacturers make, but merely an index of the CONTENTS of both the reading and advertising pages of THIS PARTICULAR ISSUE, and is placed here for the benefit and convenience of our readers

Dumping Units	
Columbian Steel Tank Co.	111
Ditwiler Manufacturing Co.	4
Fitz Gibbon & Crisp, Inc.	103
Heil Co.	63
Wood Hydraulic Hoist & Body Co.	100

Dust Caps	
Schrader's, A., Son, Inc.	70

Electric Lighting Systems	
(See Starting and Lighting Outfits)	

Engines	
Beaver Manufacturing Co.	124
Buda Co.	90
Continental Motors Corporation	Back Cover
Hinkley Motors, Inc.	87
Waukesha Motor Co.	126
Wellman-Seaver-Morgan Co.	129

Equipment & Parts for Ford Cars	
Ditwiler Manufacturing Co.	4
Fitz Gibbon & Crisp, Inc.	103
Ohmer Fare Register Co.	120
Stewart Iron Works Co.	128
Veeder Mfg. Co.	123

Fare Registers & Boxes	
Ohmer Fare Register Co.	120

For Sale (Industrial Plant)	
Pittsburgh Model Engine Co.	76

Forgings	
Park Drop Forge Co.	128
Wyman-Gordon Co.	131

Frames	
Parish Manufacturing Co.	123
Van Dorn Iron Works Co.	Inside Back Cover

Gauges	
Schraders, A., Son, Inc.	70

Gears (Transmission)	
Brown-Lipe-Chapin Co.	130
Fuller & Sons Manufacturing Co.	61

Generators (Lighting & Starting)	
Leece-Neville Co.	129

Governors (Engine)	
Pierce Governor Co.	104

Grease, Oil Cups & Guns	
Bowen Products Corporation	123

Heating Systems	
Petry, N. A., Co., Inc.	118

Hoists & Cranes	
-----------------	--

Archer Iron Works	125
Columbian Steel Tank Co.	111
Ditwiler Manufacturing Co.	4
Fitz Gibbon & Crisp, Inc.	103
Heil Company	63
Hydraulic Hoist Mfg. Co.	139
Mead-Morrison Manufacturing Co.	81
Rock Manufacturing Co.	127
Silent Hoist Co.	131
Van Dorn Iron Works Co.	
Inside Back Cover	
Wood Hydraulic Hoist & Body Co.	100

Horns	
North East Electric Co.	94

Housing Power Unit	
A. B. & B. Sheet Metal Works	126

**QUALITY**  
Piston Rings

**What do you demand in a Piston Ring?**

You demand a ring that is easily installed, that is accurate, flat, and quick-seating — of course.

But you should also demand a ring that will give efficient service over a long period of time, that possesses lasting resiliency, that is priced at a reasonable and common-sense figure and that is produced by a responsible organization, able to give instant shipping service on all sizes.

*ALL* of these are afforded by **QUALITY** Piston Rings.

You have the right to expect them.  
You SHOULD demand them.

*The Piston* RING COMPANY  
Muskegon, Michigan

## BUYERS' INDEX—Continued

<b>Hub Odometers</b>	
Ohmer Fare Register Co. ....	120
Veeder Mfg. Co. ....	123
<b>Ignition Specialties</b>	
Eisemann Magneto Corporation ....	119
North East Electric Co. ....	94
Splitdorf Electrical Co. ....	84
Teagle, The, Co. ....	116
Westinghouse Electric & Manufacturing Co. ....	110
<b>Jacks</b>	
Buckeye Jack Mfg. Co. ....	132
<b>Lathes</b>	
Albertson & Co. ....	102
<b>Lighting Outfits</b>	
Prest-O-Lite Co., The, Inc. ....	96, 97
<b>Loaders (Truck)</b>	
Amos Loader Co. ....	125
<b>Loading Devices</b>	
Evans, E. S. & Co., Inc. ....	3
<b>Lubricants</b>	
Dixon, Joseph, Crucible Co. ....	117
<b>Lubricating Systems</b>	
Bowen Products Corporation. ....	128
<b>Lubricators</b>	
Bowen Products Corporation. ....	128
<b>Machines</b> (See Tools, Machine, Etc.)	
<b>Magnets</b>	
Eisemann Magneto Corporation. ....	119
Splitdorf Electrical Co. ....	84
Teagle, The, Co. ....	116
<b>Malleable Castings</b>	
American Malleable Castings Association	82
<b>Motors (Gasoline)</b> (See Engine, Gasoline)	
<b>Mufflers and Cutouts</b>	
Petry, N. A., Co., Inc. ....	118
<b>Oils</b> (See Lubricants)	
<b>Pedals</b>	
Petry, N. A., Co., Inc. ....	118
<b>Piston Rings and Pins</b>	
Dall Motor Parts Co. ....	132
Piston Ring Co. ....	135
<b>Pressed Steel Parts</b>	
Van Dorn Iron Works Co. ....	Inside Back Cover
<b>Pressed Steel Tanks</b>	
Hell Co. ....	63
<b>Propeller Shafts</b>	
Blood-Brothers Machine Co. ....	132
Spicer Manufacturing Corporation. ....	123
<b>Pumps (Tire)</b>	
Petry, N. A., Co., Inc. ....	118
<b>Radiators</b>	
Racine Radiator Co. ....	124
<b>Rattan Car Seat Webbing</b>	
Heywood-Wakefield Co. ....	130
<b>Reamers</b>	
Albertson & Co. ....	102
<b>Roller Bearings</b>	
Gilliam Manufacturing Co. ....	6
Hyatt Roller Bearing Co. ....	112
Norma Co. of America ....	125
Timken Roller Bearing Co. ....	5
<b>Seats</b>	
Hale-Kilburn Co. ....	60
Heywood-Wakefield Co. ....	130
<b>Sheet Packings</b>	
Johns-Manville, Inc. ....	65, 66, 67, 68
<b>Spark Plugs</b>	
Splitdorf Electrical Co. ....	84
<b>Speedometers</b>	
North Easte Electric Co. ....	94
<b>Springs (Auto)</b>	
Mather Spring Co. ....	114
Sheldon Axle & Spring Co. ....	123
<b>Starting and Lighting Outfits</b>	
Eclipse Machine Co. (Bendix Drive) ....	130
Leece-Neville Co. ....	129
North East Electric Co. ....	94
Westinghouse Electric & Manufacturing Co. ....	110
<b>Steering Gears</b>	
Lavine Gear Co. ....	138
Ross Gear & Tool Co. ....	53
<b>Tanks (Air, Gasoline and Oil)</b>	
Columbian Steel Tank Co. ....	111
Heil Co. ....	63
<b>Tape</b>	
Johns-Manville, Inc. ....	65, 66, 67, 68
<b>Time Recorders</b>	
Service Recorder Co. ....	127
<b>Tires</b>	
Federal Rubber Co. ....	107
Firestone Tire & Rubber Co. ....	72
Fish Tire Co., Inc. ....	122
General Tire & Rubber Co. ....	133
Goodrich, B. F., Rubber Co. ....	74
India Tire & Rubber Co. ....	137
Kelly-Springfield Tire Co. ....	92
Republic Rubber Co. ....	89
Thermoid Rubber Co. ....	85, 86
United States Rubber Co. ....	124
<b>Tire Adapters</b>	
Wilcox Trux, Inc. ....	73
<b>Tire Valve Parts</b>	
Schraders, A., Son, Inc. ....	70
<b>Tops</b>	
Weatherproof Body Corporation....	118, 120
<b>Top Materials</b>	
Pantasote Co. ....	77
<b>Trailers</b>	
Fruehauf Trailer Co. ....	125
<b>Transmission</b>	
Cotta Gear Co. ....	131
Detroit Gear & Machine Co. ....	132
Fuller & Sons Manufacturing Co. ....	61
<b>Transmission Linings</b>	
Thermoid Rubber Co. ....	85, 86
<b>Universal Joints</b>	
Blood-Brothers Machine Co. ....	132
Thermoid Rubber Co. ....	85, 86
<b>Valves</b>	
Oakley Valve Co. of Conn., Inc. ....	116
Petry, N. A., Co., Inc. ....	118
<b>Valves (Tire)</b>	
Schrader's, A., Son, Inc. ....	70
<b>Valve Caps</b>	
Schrader's, A., Son, Inc. ....	70
<b>Valve Grinders</b>	
Albertson & Co. ....	102
<b>Valve Grinding Attachments</b>	
Albertson & Co. ....	102
<b>Valve Insides</b>	
Schrader's, A., Son, Inc. ....	70
<b>Wheels</b>	
Bethlehem Steel Co. ....	51
Clark Equipment Co. ....	Inside Front Cover
Dayton Steel Foundry Co. ....	88
Hoopes, Bro. & Darlington, Inc. ....	127
<b>Winches, Truck</b>	
Mead-Morrison Manufacturing Co. ....	81
Silent Hoist Co. ....	131

See the DeLuxe Six Cylinder Bus at the Pier

*Space  
707*



*Atlantic City  
October 6th to 10th*

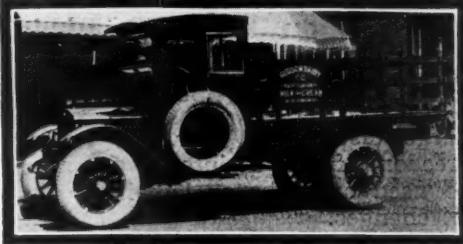
COMMERCE MOTOR TRUCK COMPANY  
YPSILANTI, MICHIGAN

# INDIA TIRES

Wherever tires are judged by their dependability and low cost per mile



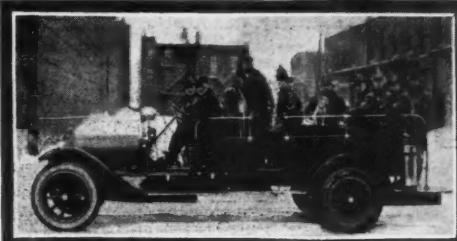
18,000 to 24,000 is the mileage INDIAS give on the large fleet of heavily loaded trucks operated by the FELBER BISCUIT COMPANY, COLUMBUS, OHIO. No wonder they are partial to INDIAS.



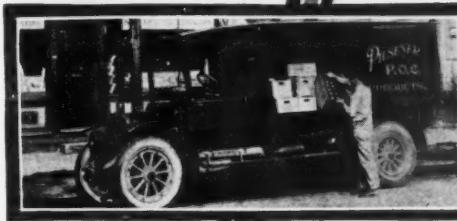
HUDSON DAIRY COMPANY, ROCHESTER, N. Y. Dairies prefer INDIA CORDS for the way they stand up under heavy overloads.



The FAMOUS PLAYERS-LASKY CORP. has six heavy "Wind Machines" like these, with 100 h.p. aero-plane motors—all on INDIA CORDS.



FIRE INSURANCE PATROL, CHICAGO. These firemen will tell you INDIA TIRES can be depended upon in any emergency.



Bottle trucks are frequently overloaded. That's why so many are equipped with INDIA HEAVY SERVICE CORDS.



SUPERIOR POUND CAKE BAKING COMPANY, LOS ANGELES, uses INDIAS on all of their "33" delivery cars because they "cost less per mile."

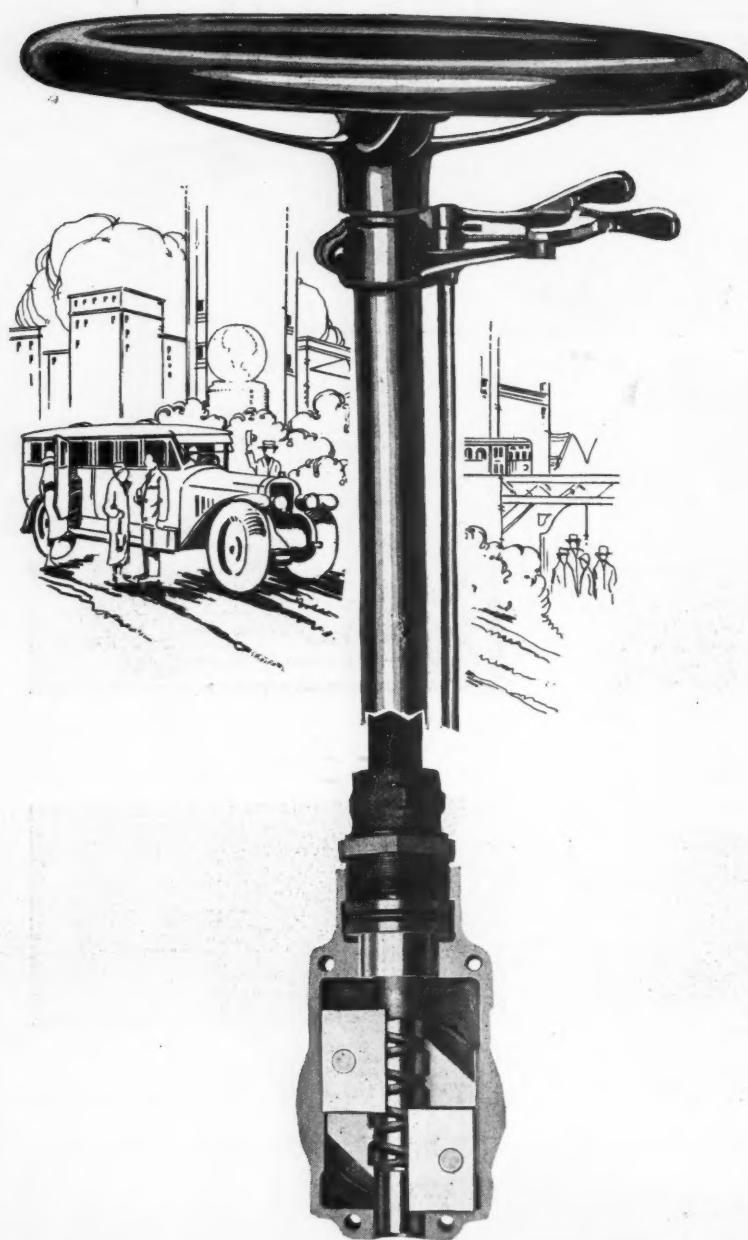


THE INDIA TIRE & RUBBER CO., AKRON, OHIO



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Another Step in  
Automotive Advancement



A step in truck, bus and other heavy duty steering far in advance of anything heretofore developed.

#### Easier Control

especially at extreme positions.

No road shocks or strain due to split nut and worm construction which gives irreversibility.

#### Safety and Greatly Reduced Wear

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#### Balanced Design, Pressure Lubrication, Easy and Accessible Upper External Adjustment

give large distribution of wear, long life and freedom from maintenance expense. Can be used on right or left-hand drives without changes.

#### Built in Three Designs

Model L for 1, 1½, 2 ton trucks.

Model M for 2½, 3, 3½ ton trucks.

Model H for trucks of over 3½ tons.

Buses will use model best adaptable to capacity.

Due to its great ease of operation, especially at extremes, this new LAVINE Steering Gear gives wonderful results in use with balloon tires.

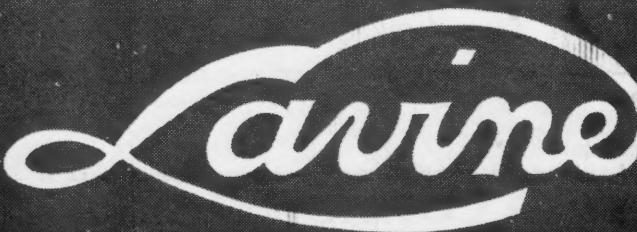
Write today for full details

**Lavine Gear Company**

60-80 Keefe Avenue

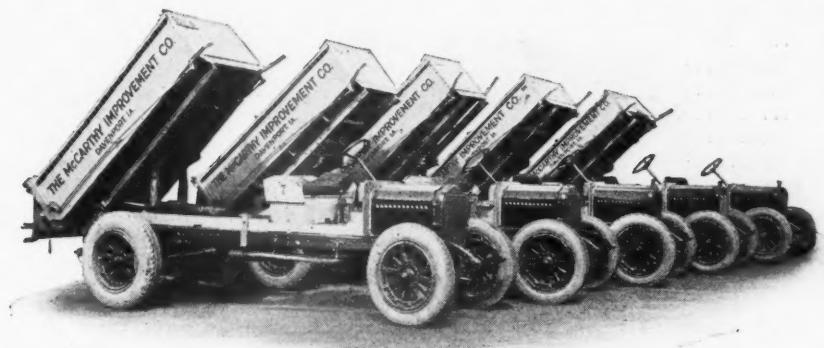
Milwaukee

Wisconsin

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Gears**



Part of a Fleet of St. Paul Hoist Equipped White Trucks Operated by the Missouri Portland Cement Co., St. Louis, Mo.



The McCarthy Improvement Co. at Davenport, Iowa, Own a Large Fleet of Trucks, Partly Shown Above, All St. Paul Equipped

Constructive materials must be delivered regularly at specified intervals.

Most large material handling institutions choose St. Paul Hydraulic Hoists because they can be counted upon to meet all such obligations.

## Certify Your Deliveries With St. Paul Hoists

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**=St. Paul=**  
VERTICAL AND UNDERBODY  
HYDRAULIC HOISTS

# Advertisers' Index

## A

A. B. & B. Sheet Metal Works ..... 126  
 Acme Motor Truck Co. ..... 55  
 Albertson & Co. ..... 102  
 American Malleable Castings Association ..... 82  
 Amos Loader Co. ..... 125  
 Archer Iron Works ..... 125  
 Atterbury Motor Car Co. ..... 98, 99

## B

Bearings Co. of America ..... 129  
 Beaver Manufacturing Co. ..... 124  
 Bethlehem Motors Corporation ..... 129  
 Bethlehem Steel Co. ..... 51  
 Blood-Brothers Machine Co. ..... 132  
 Bowen Products Corporation ..... 128  
 Bridgeport Motor Truck Co. ..... 124  
 Brown-Lipe-Chapin Co. ..... 130  
 Buckeye Jack Mfg. Co. ..... 132  
 Buda Co. ..... 90

## C

Clark Equipment Co.,  
 Inside Front Cover  
 Columbian Steel Tank Co. ..... 111  
 Commerce Motor Truck Co. ..... 136  
 Continental Motors Corporation,  
 Back Cover  
 Cotta Gear Co. ..... 131

## D

Dall Motor Parts Co. ..... 132  
 Day-Elder Motors Corporation ..... 130  
 Dayton Steel Foundry Co. ..... 88  
 Detroit Gear & Machine Co. ..... 132  
 Ditwiler Manufacturing Co. ..... 4  
 Dixon, Joseph, Crucible Co. ..... 117

## E

Eclipse Machine Co. ..... 130  
 Eisemann Magneto Corp. ..... 119  
 Evans, E. S. & Co., Inc. ..... 3

## F

Federal Motor Truck Co. ..... 24  
 Federal Rubber Co. ..... 107  
 Firestone Tire & Rubber Co. ..... 72  
 Fisk Tire Co., Inc. ..... 122  
 Fitz Gibbon & Crisp, Inc. ..... 103  
 Fruehauf Trailer Co. ..... 125  
 Fuller & Sons Manufacturing Co. ..... 61

## G

Garford Motor Truck Co. ..... 57  
 General Motors Truck Co. ..... 93  
 General Tire & Rubber Co. ..... 133  
 General Woodwork Corporation ..... 117  
 Gilliam Manufacturing Co. ..... 6  
 Goodrich, B. F., Rubber Co. ..... 74  
 Gramm-Bernstein Truck Corp. ..... 115

## H

Hale-Kilburn Co. ..... 60  
 Heil Co. ..... 63  
 Heywood-Wakefield Co. ..... 130  
 Highland Body Mfg. Co. ..... 115  
 Hinkley Motors, Inc. ..... 87  
 Hoopes, Bro. & Darlington, Inc. ..... 127  
 Hyatt Roller Bearing Co. ..... 112  
 Hydraulic Hoist Mfg. Co. ..... 139

## I

India Tire & Rubber Co. ..... 137  
 International Harvester Co. of America, Incorporated ..... 8

## J

Johns-Manville, Inc. ..... 65, 66, 67, 68

## K

Kelly-Springfield Tire Co. ..... 92

## L

Lavine Gear Co. ..... 138  
 Leece-Neville Co. ..... 129  
 Luedinghaus-Espenschied Wagon Co. ..... 80

## M

Marlin-Rockwell Corporation ..... 127  
 Mason Motor Truck Co. ..... 91  
 Mather Spring Co. ..... 114  
 Mead-Morrison Manufacturing Co. ..... 81  
 Metropolitan Body Co. ..... 131

## N

Naceskid Chain Co. ..... 122  
 New Departure Manufacturing Co. ..... 7  
 Norma Co. of America ..... 125  
 North East Electric Co. ..... 94

## O

Oakley Chemical Co. ..... 121  
 Oakley Valve Co., of Conn., Inc. ..... 116  
 Ohmer Fare Register Co. ..... 120  
 Oshkosh Motor Truck Mfg. Co. ..... 119

## P

Pantasote Co. ..... 77  
 Parish Manufacturing Corporation. 123  
 Park Drop Forge Co. ..... 128  
 Petry, N. A. Co., Inc. ..... 118  
 Pierce-Arrow Motor Car Co. ..... 78  
 Pierce Governor Co. ..... 104  
 Piston Ring Co. ..... 135  
 Pittsburgh Model Engine Co. ..... 76  
 Prest-O-Lite Co., Inc., The ..... 96, 97

## R

Racine Radiator Co. ..... 124  
 Reo Motor Car Co. ..... Front Cover  
 Republic Motor Truck Co., Inc. ..... 128  
 Republic Rubber Co. ..... 89  
 Rock Manufacturing Co. ..... 127  
 Ross Gear & Tool Co. ..... 53  
 Ruggles Motor Truck Co. ..... 59

## S

Salisbury Axle Co. ..... 123  
 Sanford Motor Truck Co. ..... 141  
 Schacht, G. A., Motor Truck Co. ..... 113  
 Schrader's, A. Son, Inc. ..... 70  
 Selden Truck Corporation ..... 121  
 Service Motors, Incorporated ..... 64  
 Service Recorder Co. ..... 127  
 Sheet Steel Products Co. ..... 126  
 Sheldon Axle & Spring Co., Huck Axle Division ..... 79, 123  
 Shuler Axle Co., Incorporated ..... 62  
 Silent Hoist Co. ..... 131  
 Skayef Ball Bearing Co. ..... 2  
 Spicer Manufacturing Corporation. 123  
 Splitdorf Electrical Co. ..... 84  
 Stewart Iron Works Co. ..... 128  
 Stewart Motor Corporation ..... 75  
 Strom Ball Bearing Mfg. Co. ..... 109  
 (Formerly U. S. Ball Bearing Mfg. Co.)  
 Stromberg Motor Devices Co. ..... 95

## T

Teagle, The, Co. ..... 116  
 Thermoid Rubber Co. ..... 85, 86  
 Timken-Detroit Axle Co. ..... 69  
 Timken Roller Bearing Co. ..... 5

## U

United Motors Products Co. ..... 106  
 United States Rubber Co. ..... 124

## V

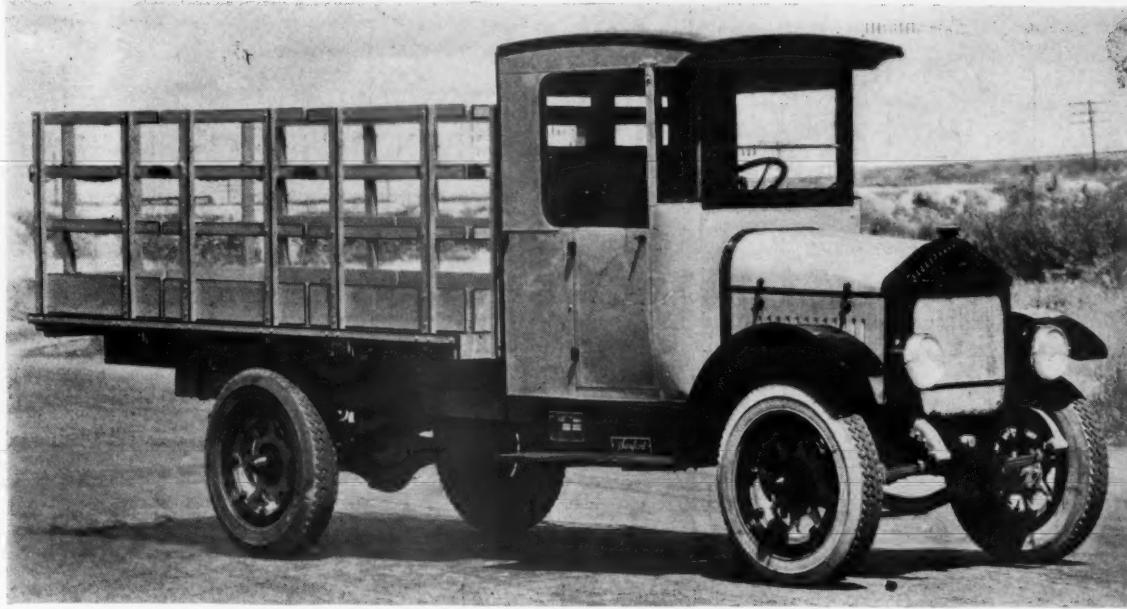
Van Dorn Iron Works Co.,  
 Inside Back Cover  
 Veeder Mfg. Co. ..... 123

## W

Walker Vehicle Co. ..... 71  
 Ward Motor Vehicle Co. ..... 142  
 Waukesha Motor Co. ..... 126  
 Weatherproof Body Corp. ..... 118, 120  
 Wellman-Seaver-Morgan Co. ..... 129  
 Westinghouse Electric & Manufacturing Co. ..... 110  
 White, The, Co. ..... 105  
 Whitfield & Sons, Inc. ..... 108  
 Wilcox Trux, Inc. ..... 73  
 Willys-Overland, Inc. ..... 101  
 Wood Hydraulic Hoist & Body Co. ..... 100  
 Wyman-Gordon Co. ..... 131

## Z

Zenith-Detroit Corporation ..... 83



## Now You Can Give Them What They Want!

*"Haul bigger loads at higher speed and you cut your ton-mile costs."*

That idea, coming like a new advancement in motor trucking, is building a tremendous demand for a truck designed especially for the purpose.

This 1 1/2-2 ton "SANFORD LEADER" with a heavy-duty SIX-CYLINDER motor, worm drive axle, enclosed cab and with tires and equipment intended for the comfort and safety of the driver and increased shock resistance for the cargo, is exactly the truck the nation wants for this big, new field.

Thirty-five or forty miles per hour with a *real* load means a new record of economy in transportation. The "SANFORD LEADER" in doing this, takes a new measure of a day's work. *Old* standards of what an outfit can do will no longer be of use. The dealer who rides in on this new wave of better service and reduced costs for his customers will *get his share*.

There is some valuable territory still open. Wire for the facts today!

**Sanford Motor Truck Co.**  
SYRACUSE, N. Y.

This company has been manufacturing high-grade trucks for over 15 years.



"The  
*Sanford*  
Leader"





**Kolb Baking Co., Baltimore, operates 31 Ward Electrics, 10 Gas Trucks and no horses.**

## To complete motorization you need electrics

Electric trucks alone enable you to beat horse costs on *short-haul or frequent-stop routes*. To run such routes quickly the gas truck engine must be left running all the time it is on the route consuming fuel and wearing itself out. Stopping 100 times or over daily ruins self-starters in a short time. Cranking up consumes too much time. Hence gas truck running and upkeep costs are high.

The electric truck's power can be snapped on and off instantly. It only runs the 1½ to 3 hours it is in motion—not 8 or 9 hours—most of which the vehicle is standing still. Moreover the electric truck lasts 10 to 20 years against an average life of 5 years for horses and gas trucks. It can beat "Dobbin" on running, upkeep and depreciation.

Ward Electrics are used extensively by bakeries, laundries, and dairies—fields in which the horse is most strongly entrenched.

The average yearly cost of current of a Ward Electric on a bakery or laundry route is \$68 plus \$139 battery expense (first cost, repairs and renewal) or \$207 altogether. Feed and bedding for a horse comes to about \$225. On a dairy or ice cream route current and battery expense averages \$265, as against \$275 for Dobbin's board-bill.

The lower maintenance cost and greater endurance of a Ward Electric Truck also help them to beat Dobbin's vaunted cheapness on short-haul or frequent-stop routes.

Mr. Geyer of O. H. Geyer & Sons, Chicago Dairy, has stated his books show that his 2 Ward Electrics

bought in 1917 have never cost him \$50 per year for repairs. O. H. Geyer & Sons are an "all electric" dairy.

International Dairy Co., Chicago, another "all electric" dairy, have recently written us that their first Ward Truck bought September, 1921, has only been out of service 10 days since they bought it. In other words, it has averaged 362 days' service a year. Other customers frequently write us that their Wards have never been out of service excepting for painting. Horses on dairy routes average only 200 to 250 days actual service in a year.

Tire replacement runs much less than the cost of shoeing horses on short-haul or frequent-stop routes.

Ward Electrics only take  $\frac{1}{2}$  to  $\frac{1}{5}$  the housing space of horse equipment and 15% less than gas trucks. Some users store them right at their loading platform doing away with garage space altogether. There is no fire risk or danger of freezing.

Ward Electrics are sold on a transportation engineering basis—you are a professional adviser to your customers. They are only recommended on routes where they show lower costs than gas trucks.

Electrics should be carried in conjunction with your gas truck business. The two vehicles cover the entire transportation field. We have 7 sizes: 750 lbs. to 7 tons—the smallest and largest electrics!

We have a real dealer policy. Write for franchise information.

**Ward Motor Vehicle Co., Mt. Vernon, N.Y.**

# **Ward Electric Trucks cut delivery costs 20% to 35%**

# THE COMMERCIAL CAR JOURNAL

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#### TABLE OF CONTENTS

	PAGE
Advertisers' Index	140
Bus Table	44
Buyers' Index of Reading and Advertising Pages	136
Coming Events	32
Commercial Car Specifications	33
Editorials	27
News of the Trade, Including Personals, Factory Items, Etc.	28
Replacement Table	46

#### SPECIAL ARTICLES

Difference Between Bunk and Bank is "U".....	9
Enforce the Personal Obligation.....	10
Electrical Men Agree on Sales Policies.....	11
Common Sense and Hard Work.....	12
Need for Electric Truck Dealers.....	13
Maintenance and Operation Feature S. A. E. Meeting.....	14
A. B. C. B. Exhibit and Convention.....	16
Essentials on Flat Rate Operation.....	17
The Motor Coach.....	19
Portable Grocery Store Operation.....	21
Regulations on Tax Collection.....	24



## The Fisk Truck Line

### *Solid and Pneumatic*

WHICH included two new tires this year, has been very popular with distributors and fleet owners.

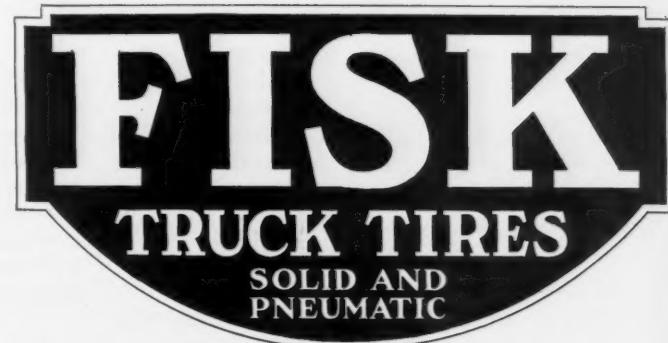
It is generally known and accepted in the trade that the same progressive policy, the same dependable quality and the same co-operative spirit that have made the Fisk name so powerful among passenger car owners and with dealers everywhere, are all 100% present in the Fisk Truck Tire and its sales organization.

More and more the big distributors of the country are seeking the Fisk Truck Tire franchise.

There are still some cities and sections where territory is open. If you are looking for a good line, a good proposition and keen and really helpful interest on the part of the manufacturer you represent, an inquiry addressed to the Fisk Tire Company, Inc., will bring you a worth-while response.



THE FISK TIRE CO., Inc.  
CHICOPEE FALLS, MASS.





## How Near is Your Newspaper?

You're as convenient to the right Timken Bearing at any moment of need as you are to a daily newspaper. There are fully as many Authorized Distributors of Timken Bearings in the United States as there are towns having "dailies." And when a bearing problem arises, your local Timken Distributor is a veritable "newspaper" of information. The builder of your trucks used Timken Bearings in your interest. Get acquainted with your local authorized distributor, if you don't already know him. Write our nearest factory branch.

**THE  
TIMKEN ROLLER BEARING SERVICE  
& SALES COMPANY  
CANTON, OHIO**

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Birmingham  
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Brooklyn  
Buffalo  
Chicago  
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